355

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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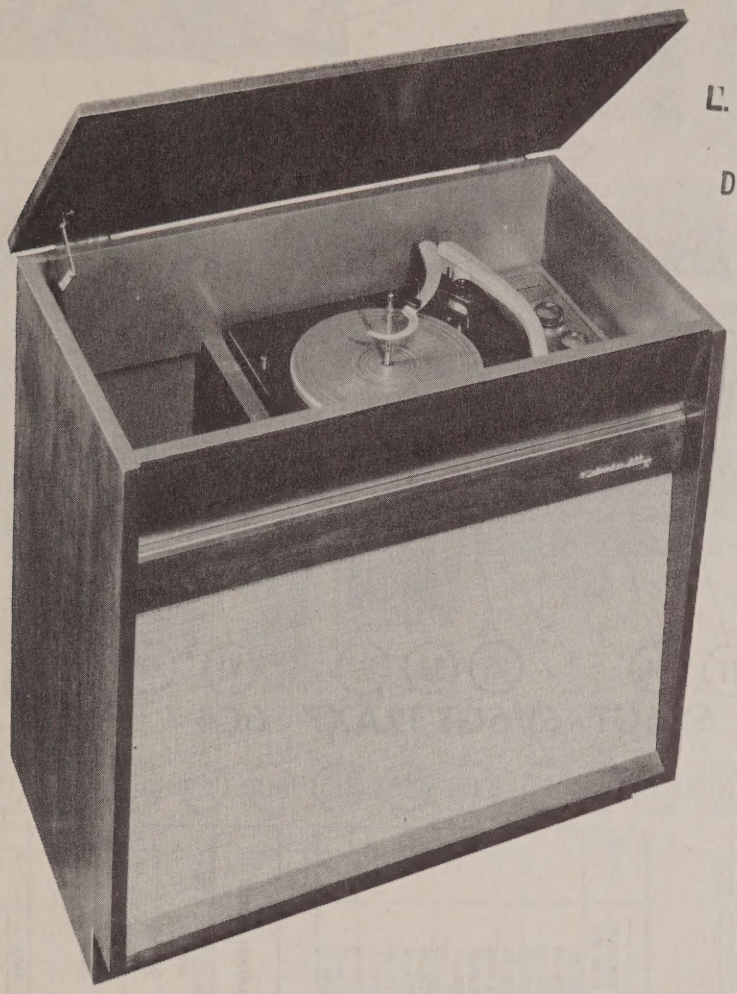
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

COLUMBIA
RECORDS MODEL 528



COLUMBIA
RECORDS MODEL 528

TRADE NAME	Columbia Records Model 528
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N.Y.
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Four)	Types 6C4 1st AF Amplifier, 12AX7 2nd AF Amp. - Phase Inv., (2) 6V6GT Output
POWER SUPPLY	105-125 Volts AC - 60 Cycles RATING .4 Amp. @ 117 Volts AC (35 Watts)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M MODEL 1200A — PHOTOFACT SET 353 FOLDER 16.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

COLUMBIA RECORDS
MODEL 528

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st AF Amplifier	6C4	
V2	2nd AF Amp. -Phase Inv.	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	40	150	11A704	PRS150V40	BR4015	TC48	TD-40-150	FM-1540	TVA-1413
C2A	▲40	150	11A708	AFH3-147	C0350	FP369.1	TMT-144	T-725	TVL-3758
B	●40	350							
C	■40	350							
C3	40	150	11A704	PRS150V40	BR4015	TC48	TD-40-150	FM-1540	TVA-1413

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C5	800			BPD-0008	DD-801	L10T8			5GA-T8	
C6	800			BPD-0008	DD-801	L10T8			5GA-T8	
C7	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C8	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C9	.02	200		BPD-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C10	.01	400		BPD-01	DD-103	CUB4S1	ED-01	GEM-411	4TM-S1	
C11	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C12	270			S1270	D6-271	LT6T27	ED-270	UC-5327	5GA-T27	
C13	.05	400		BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C14	.01	600		BPD-01	DD-103	CUB6S1	ED-01	GEM-611	6TM-S1	
C15	.05	400		BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C16	.01	600		BPD-01	DD-103	CUB6S1	ED-01	GEM-611	6TM-S1	
C17	.005	400		BPD-005	DD-502	CUB6D5	ED-005	GEM-625	6TM-D5	
C18	.05	400		BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C19	.005	400		BPD-005	DD-502	CUB6D5	ED-005	GEM-625	6TM-D5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	3.25Meg	½	9A536					Volume, Tap ⓐ 1Meg & 2Meg
R2A	5Meg	½	9A535	AB-88	A47-5Meg-Z	Q13-141	U65	Bass Note #1
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R3A	3Meg	½	9A537	B-85	A47-3Meg-Z	Q13-140	U57	Treble Note #2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note #1. 3Meg may be used in some versions.
Note #2. 250K may be used in some versions.

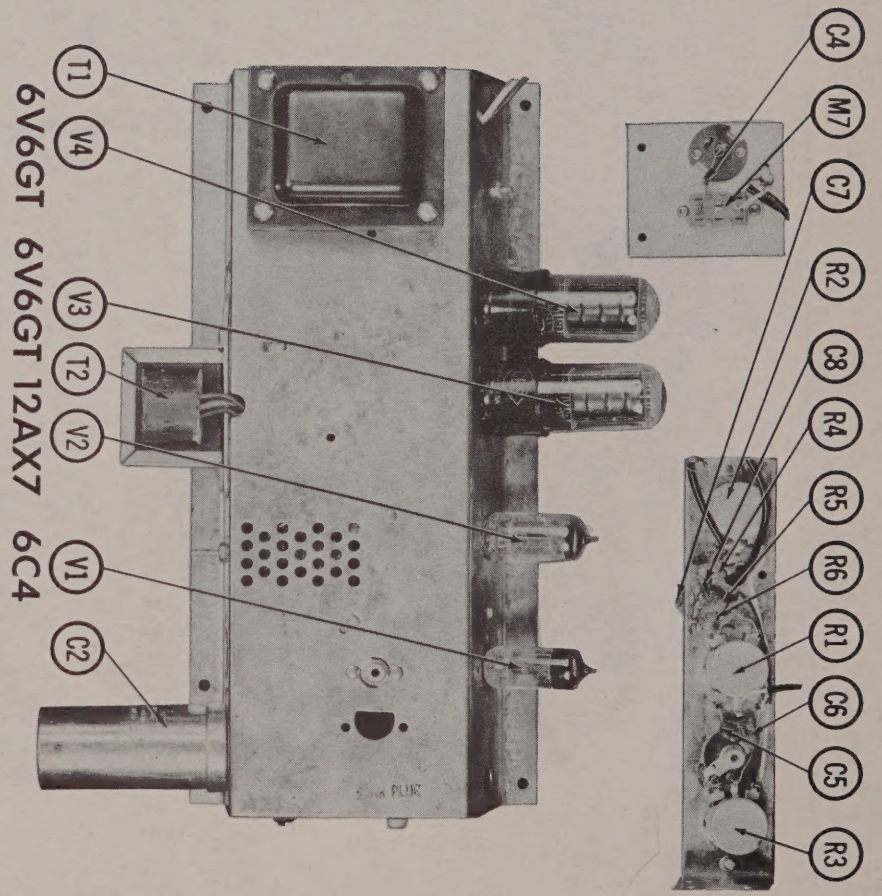
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Columbia Records PART No.	IRC PART No.	
R4	100K			BTS-100K	
R5	100K			BTS-100K	
R6	100K			BTS-100K	
R7	30K 5%			BTS-30K 5%	
R8	30K 5%			BTS-30K 5%	
R9	100K			BTS-100K	
R10	8200Ω			BTS-8200	
R11	10Meg			BTS-10Meg	
R12	270K			BTS-270K	
R13	47K			BTS-47K	
R14	10Meg			BTS-10Meg	
R15	270K			BTS-270K	
R16	470K			BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Columbia Records PART No.	IRC PART No.	
R17	470K			BTS-470K	
R18	220Ω	1		BTA-220	
R19	6.8Meg			BTS-6.8Meg	
R20	10K			BTS-10K	
R21	6.8Meg			BTS-6.8Meg	
R22	10K	2		BTB-10K	
R23	6800Ω			BTS-6800	
R24	680Ω			BTS-680	
R25	68Ω			BTS-68	
R26	68Ω			BTS-68	
R27	22K			BTS-22K	
R28	220Ω	5			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .4A	120VAC @ .2A	6.3VAC @ 1.5A		2A102					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7400Ω CT	1.6Ω	3A210	Z1002	A-2901	A-3823	24S61	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	1A107 ①	8A21 ①	① Connect In Parallel & Phase
SP2	12"	PM	3-4Ω	1A110 ①	12A6A ①	
SP3				1A106 ②		② Electrostatic

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	Columbia Records PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.062A	10A602 ②	1008A	RS100A ①	8S100D	5M1 ①	108D	
M2	.062A	10A602 ②		RS100A ①		5M1 ①		

① Mount on same mounting bolt.
② With tabs; alternate part #10A607 (without tabs).

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	Columbia Records PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M3	TO-400-0V			56	PT-1	

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Columbia-Records PART No.	JENSEN PART No.	WALCO PART No.	
M4		† CRA55 or † CRA55LP ♦ CRA55D ♦ CRA55LPD	† W-64S or † W-64MGS	† Jewel ♦ Diamond

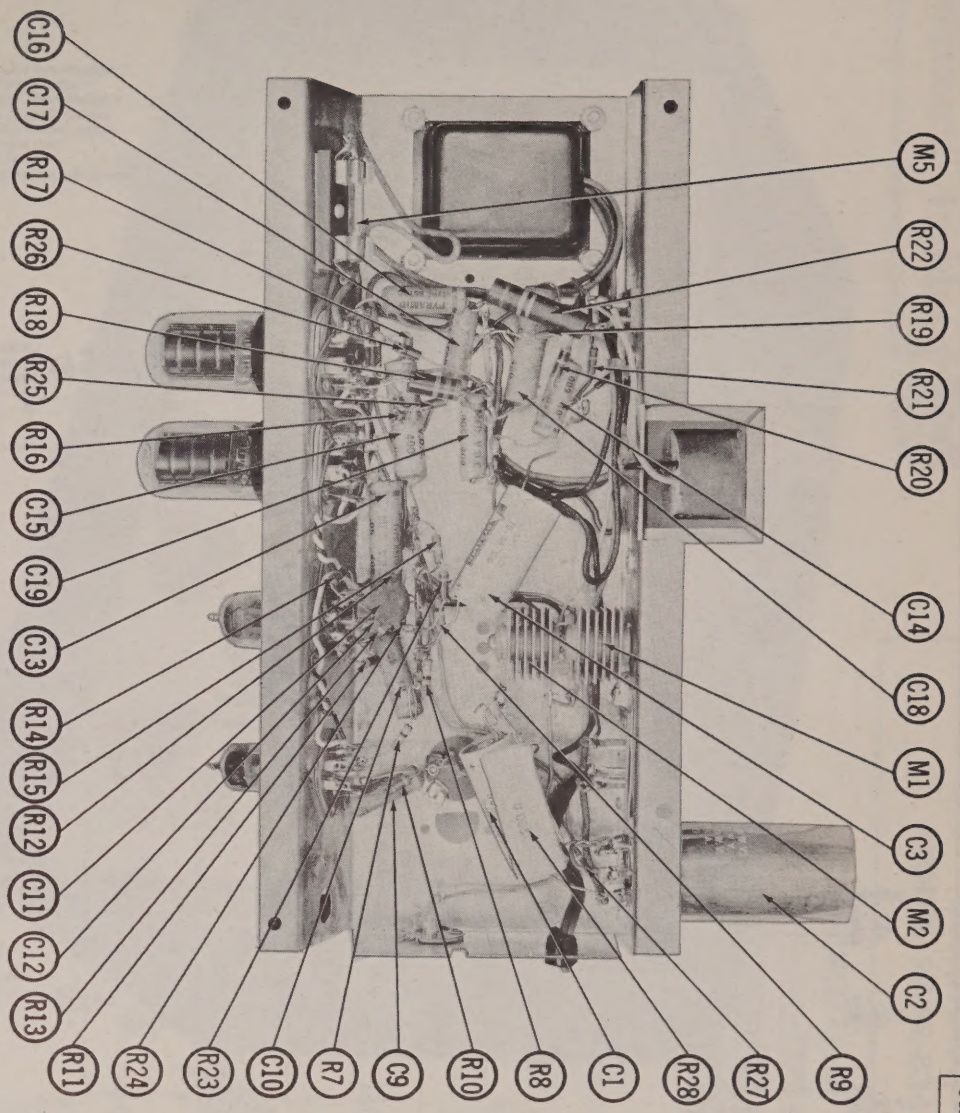
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Columbia Records PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	3AG	1A 250V		19A501	312001 (3AG1A)	357001	AGC1	4405

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M6	Pilot Light	19A503	#47
M7	Switch	19A546	Tuner-Phono Input; Slide Type (S. P. D. T.)
	Knob	8A441	Mahogany
	Knob	8A442	Blonde-Fruitwood
	Cabinet	17A933	Mahogany
	Cabinet	17A934	Blonde

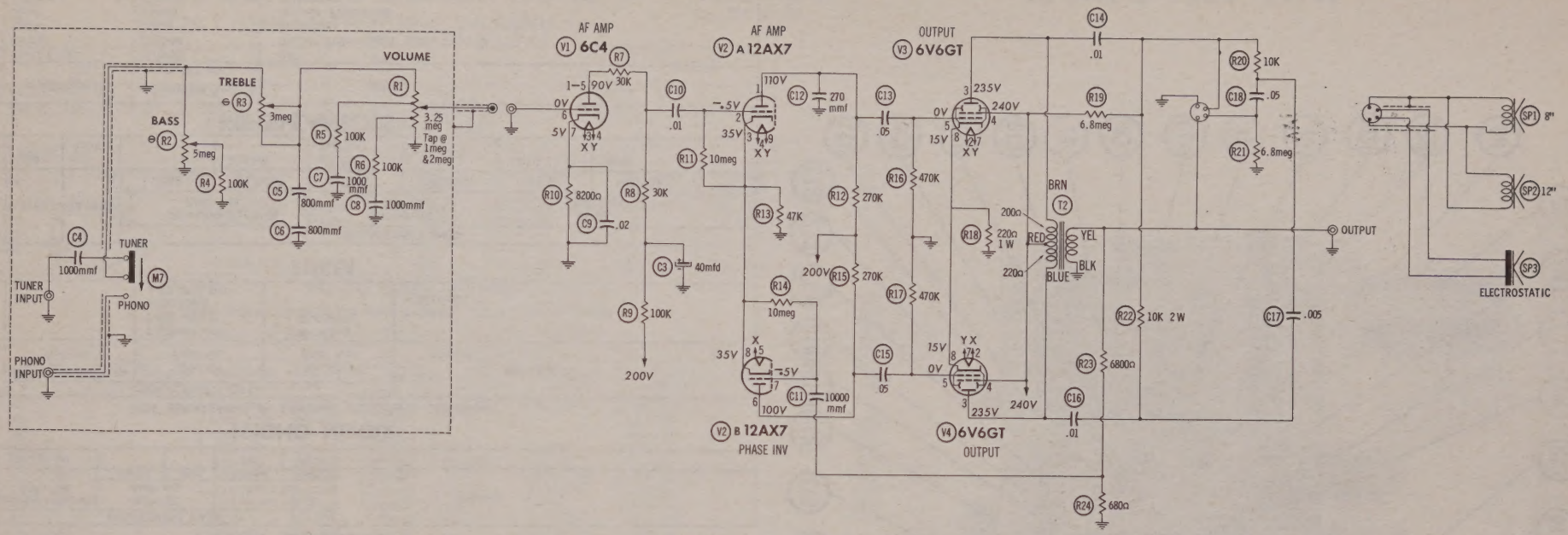
CHASSIS—BOTTOM VIEW

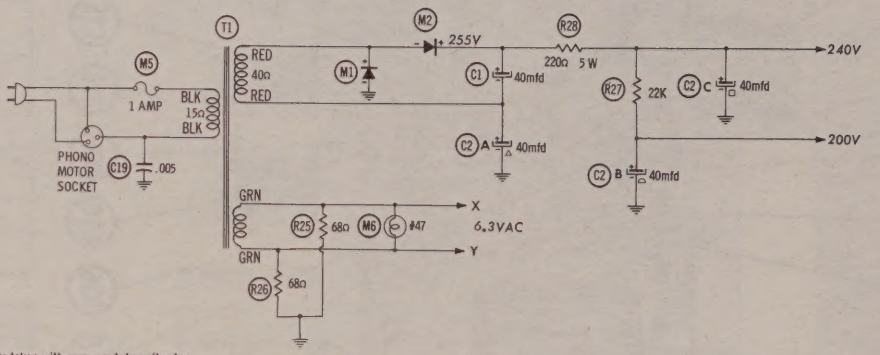


SET 355 FOLDER 1

COLUMBIA RECORDS MODEL 528

COLUMBIA RECORDS MODEL 528





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6C4	†180K	NC	30Ω	30Ω	†180K	0Ω	8200Ω		
V2	12AX7	†290K	10Meg	47K	30Ω	30Ω	†290K	10Meg	47K	30Ω
V3	6V6GT	NC	30Ω	†420Ω	†220Ω	470K	TP	30Ω	220Ω	
V4	6V6GT	NC	30Ω	†440Ω	†220Ω	470K	TP	30Ω	220Ω	

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.
TP TIE POINT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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CORONADO
MODEL RA48-8342A

PROPERTY OF
L. F. BLANKENSHIP
2024 MEADE ST.
DENVER, COLORADO

CORONADO
MODEL RA48-8342A

CORONADO
MODEL RA48-8342A

TRADE NAME	Coronado Model RA48-8342A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th Street, Minneapolis, Minn.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC
RATING	.3 Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	540KC-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1) Low side to B-.	456KC (400~ mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL RA48-8342A

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amplifier	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲60	350	(Note 1)	AFH3-100-20		FP335	TMT-175	T-375	TVL-3563
B	■200	150							
C	▲30	150							

Note #1. Some versions may use: C1A 70MFD, C1B 50MFD, C1C 20MFD (Part No. 150-125).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.068	200		P288N-068		CUB4S68		GEM-4168	4TM-S68	Note #1
C3	.068	200		P288N-068		CUB4S68		GEM-4168	4TM-S68	Note #1
C4	100			1469-0001	TCZ-100	22R5T1	TCO-100	MCE235	MS-31	Note #2
C5	.01	600		BPD-01	DD-103	CUB6S1	ED-01	GEM-611	6TM-S1	Note #3
C6	.0047	600	158-101	BPD-0047	DD-4700	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C7	10000		158-102	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C8	.05	400	152-105	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C9	.2	600								Note #4

Note #1. Some versions may use .05MFD in this application (Part #152-104).
Note #2. In some versions, C4 may be 220MMF and part of audio coupling unit Part #166-111.
Note #3. In some versions, C5 may be 5000MMF and part of audio coupling unit Part #166-111.
Note #4. Some versions may use .1MFD in this application (Part #152-108).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	120-127	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

RESISTORS

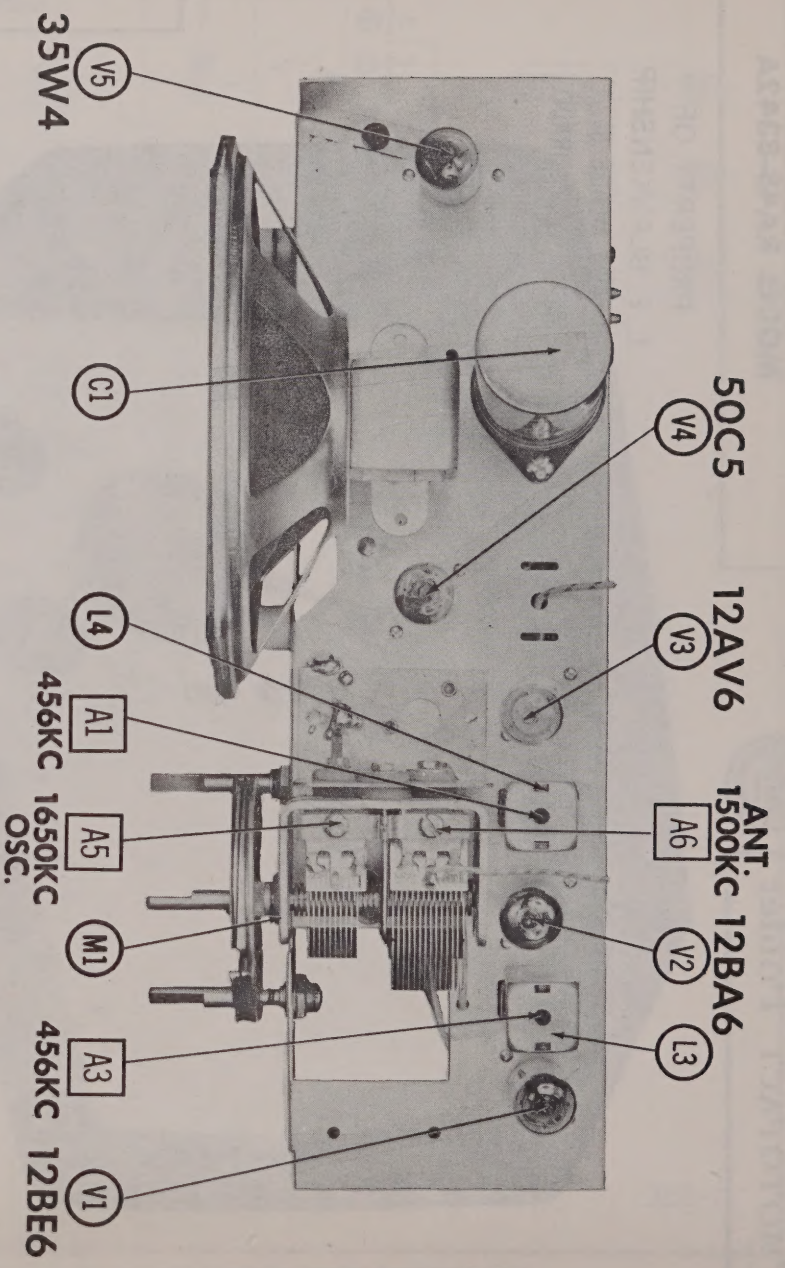
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R2	22K		180-102	BTS-22K	
R3	1000Ω		180-106	BTS-1000	
R4	270Ω			BTS-270	Note 1
R5	2.2Meg		180-107	BTS-2.2Meg	
R6	6.8Meg			BTS-6.8Meg	Note 2

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R7	1000Ω		180-106	BTS-1000	Note 3
R8	1500Ω	1	180-157	BTA-1500	
R9	150Ω		180-111	BTS-150	
R10	10K		180-160	BTS-10K	
R11	2200Ω	1	180-124	BTA-2200	

Note #1. 220Ω used in some versions (Part #180-148).
Note #2. May be part of audio coupling unit Part #166-111 in some versions.
Note #3. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3200Ω tapped	3-4Ω	138-116	Z1105	A-3031	A-3336	24S50A	S-16X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	6 1/2"	PM	3-4Ω	175-126 ①	6A1	① Includes T1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Antenna	134-109				Includes Cabinet Back
L2	Osc. Coil	136-125A			69-OSC *	* Drill New Mtg. Hole
L3	Input IF	130-114	16-6758	BC-352	12-C1	
L4	Output IF	130-114	16-6758	BC-353	12-C2	

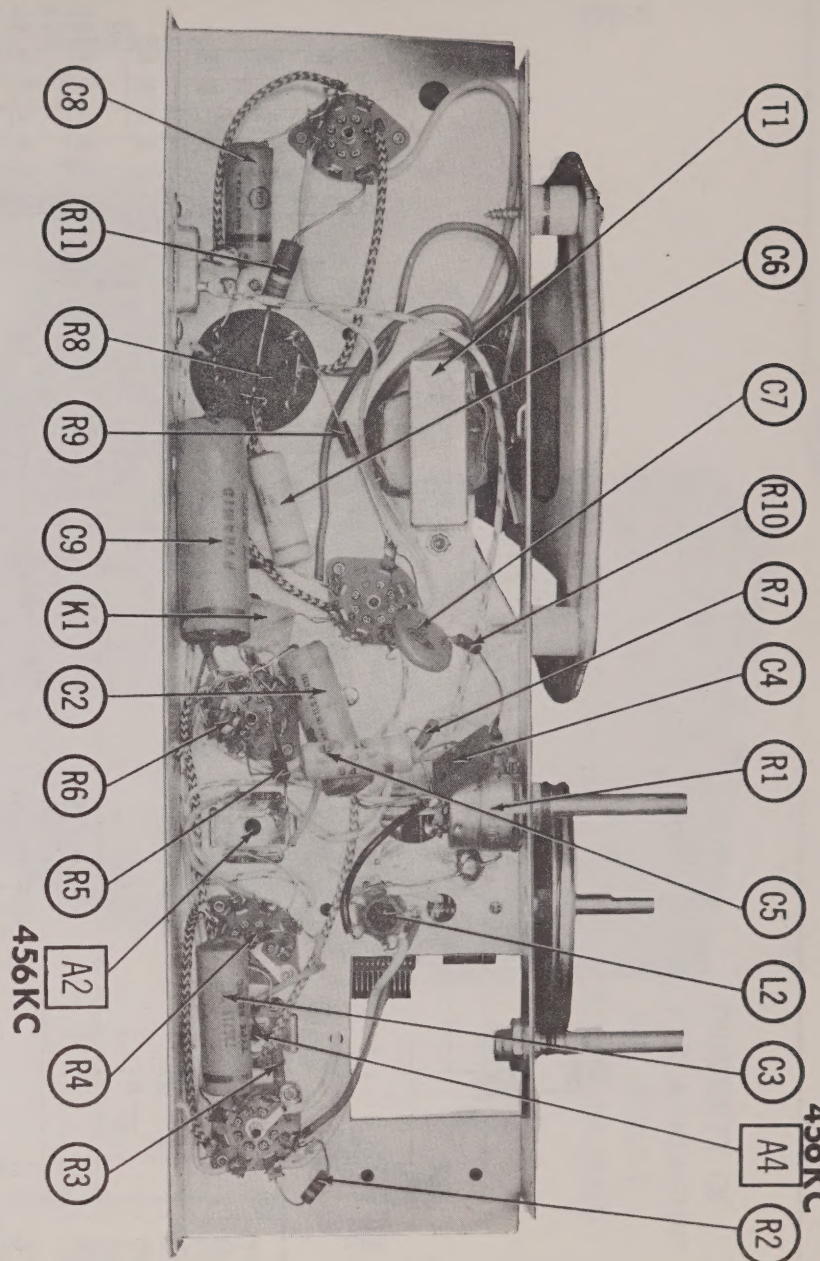
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA
K1	Audio Coup. Net	5000MMF, 250MMF, 250K, 500K		Aerovox PA-112-2 Centralab PC-71 Corneli-Dubilier 112TM2 Erie 1406-02 Sprague T-4

MISCELLANEOUS

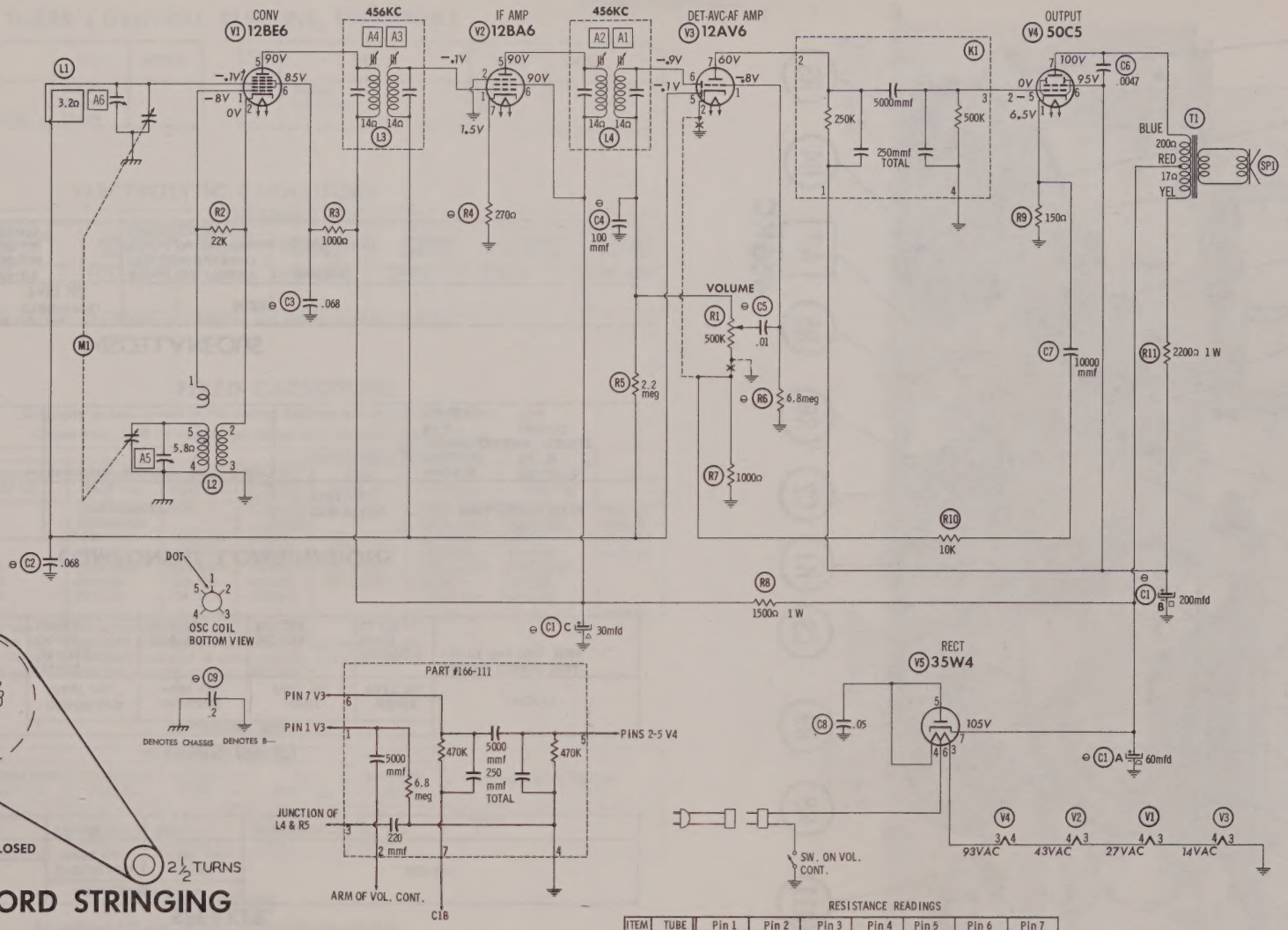
ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Tuning Cap	160-119	2 Gang (24-470MMF, 37-205MMF)
	Pointer	220-134	Dial (Specify Color)
	Knobs	220-135	Tuning, On-Off-Volume (Specify Color)
	Cabinet	212-104	Specify Color

CHASSIS—BOTTOM VIEW



CORONADO MODEL RA48-8342A

CORONADO MODEL RA48-8342A



DIAL CORD STRINGING

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	15Ω	28Ω	†1500Ω	†2500Ω	2.7Meg
V2	12BA6	2.7Meg	0Ω	28Ω	42Ω	†1500Ω	†1500Ω	270Ω
V3	12AV6	6.8Meg	0Ω	0Ω	15Ω	2.7Meg	500K	†250K
V4	50C5	150Ω	500K	95Ω	42Ω	500K	†2200Ω	†200Ω
V5	35W4	TP	NC	95Ω	135Ω	135Ω	130Ω	50K

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.
TP TIE POINT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PHOTOFACT* Folder
*TRADE MARK

CRESCENT MODELS A-740, A-4600, F-637, F-639, F-737, F-739, M-633, M-732, M-734

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3924 MEADE ST.
DENVER, COLORADO

CRESCENT MODELS A-740, A-4600, F-637, F-639, F-737, F-739, M-633, M-732, M-734

CRESCENT MODELS A-740, A-4600, F-637, F-639, F-737, F-739, M-633, M-732, M-734

TRADE NAME	Crescent Models A-740, A-4600, F-637, F-639, F-737, F-739, M-633, M-732, M-734
MANUFACTURER	Crescent Industries, Inc., 5900 W. Touhy Ave., Chicago 31, Ill.
TYPE SET	AC Operated Phono Amplifier
TUBES (Two)	Types 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC - 60 Cycles RATING .25 Amp. @ 117 Volts AC

MODELS M-633, M-732, M-734 HAVE 3 SPEED MANUAL RECORD PLAYERS.
FOR SERVICE INFORMATION ON 4 SPEED AUTOMATIC RECORD CHANGER USED IN MODEL A-740 OR 3 SPEED AUTOMATIC RECORD CHANGER USED IN MODEL A-4600 — SEE CRESCENT 500 SERIES — PHOTOFACT SET 197 FOLDER 4 OR RECORD CHANGER MANUAL CM-5.
FOR SERVICE INFORMATION ON 45RPM AUTOMATIC RECORD CHANGER USED IN MODELS F-637, F-639, F-737, F-739 — SEE SIMILAR RCA RP190 SERIES — PHOTOFACT SET 144 FOLDER 7 OR RECORD CHANGER MANUAL CM-4.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1957 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under international Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

CRESCENT MODEL A-740

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Output	50C5	

ITEM No.	USE	TYPE	NOTES
V2	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CRESCENT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	60	150	770124	PRS150/25V 5050/20	BBRQ44215C	WQ230	TDLT-17		TVA-3436
B	40	150							
C	20	20							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CRESCENT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	770122	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	Note 1
C3	.05	200	770122	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	

Note 1: Not used in models F-637, M-633, M-732.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CRESCENT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2Meg		740063					Volume & Sw.
R2	50K		740062					Tone (Note 1)

Note 1: Not used in models M633 and F-637, M-732.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CRESCENT PART No.	IRC PART No.	
R3	22K		760005	BTS-22K	
R4	1000Ω		760067	BTS-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CRESCENT PART No.	IRC PART No.	
R5	150Ω		760023	BTS-150	
R6	250Ω	5	760317	PW7-250	

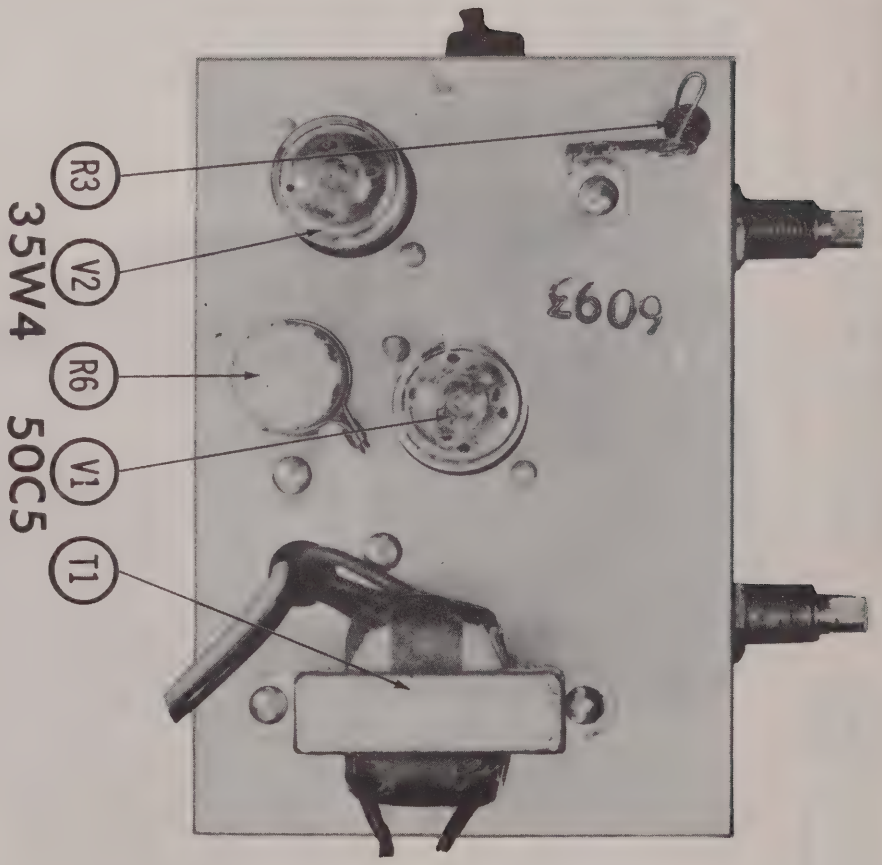
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CRESCENT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	700044	Z1102 ①	A-3031 ①	A-3336①	24S50A ①	S-16X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CRESCENT PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3-4Ω	011857 ①	52A1	① Used in models F-739 and F-639.
	5"	PM	3-4Ω	011848 ②		② Used in models F-637 and F-737.
	4"	PM	3-4Ω	011870 ③		③ Used in models M-734, M-633, M-732 and A-740.
	4" X 6"	PM	3-4Ω	012077 ④		④ Used in model A-4600.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	CRESCENT PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	720086	62-1	K			Used in models F-637, F-639, F-737, F-739.
	720046	66-2	K-AG			Used in models A-740, A-4600.
	720059	16 *P-29	N4-2	*2460 52-2	PFT-1	Used in models M-633, M-732.
	720056	420-TS *P-310T	N-8-1 N-8-3			Used in model M-734.
						* Complete Tone Arm and Cartridge Assembly.

ASTATIC NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

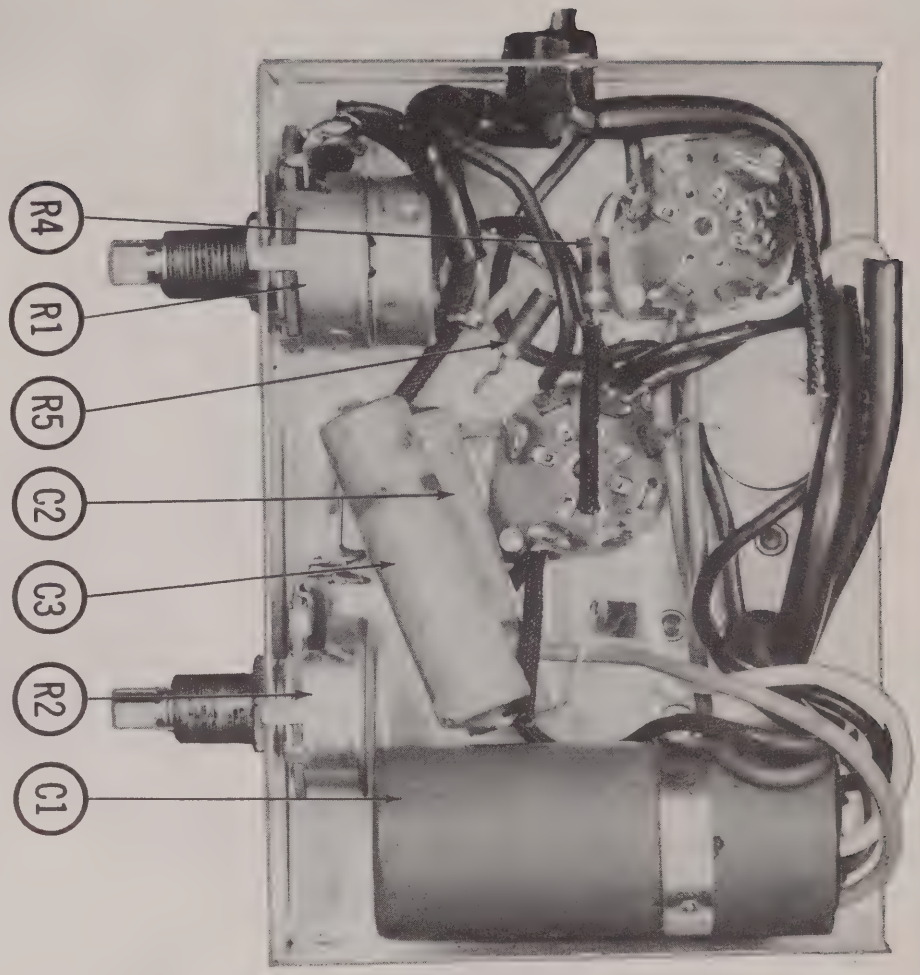
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

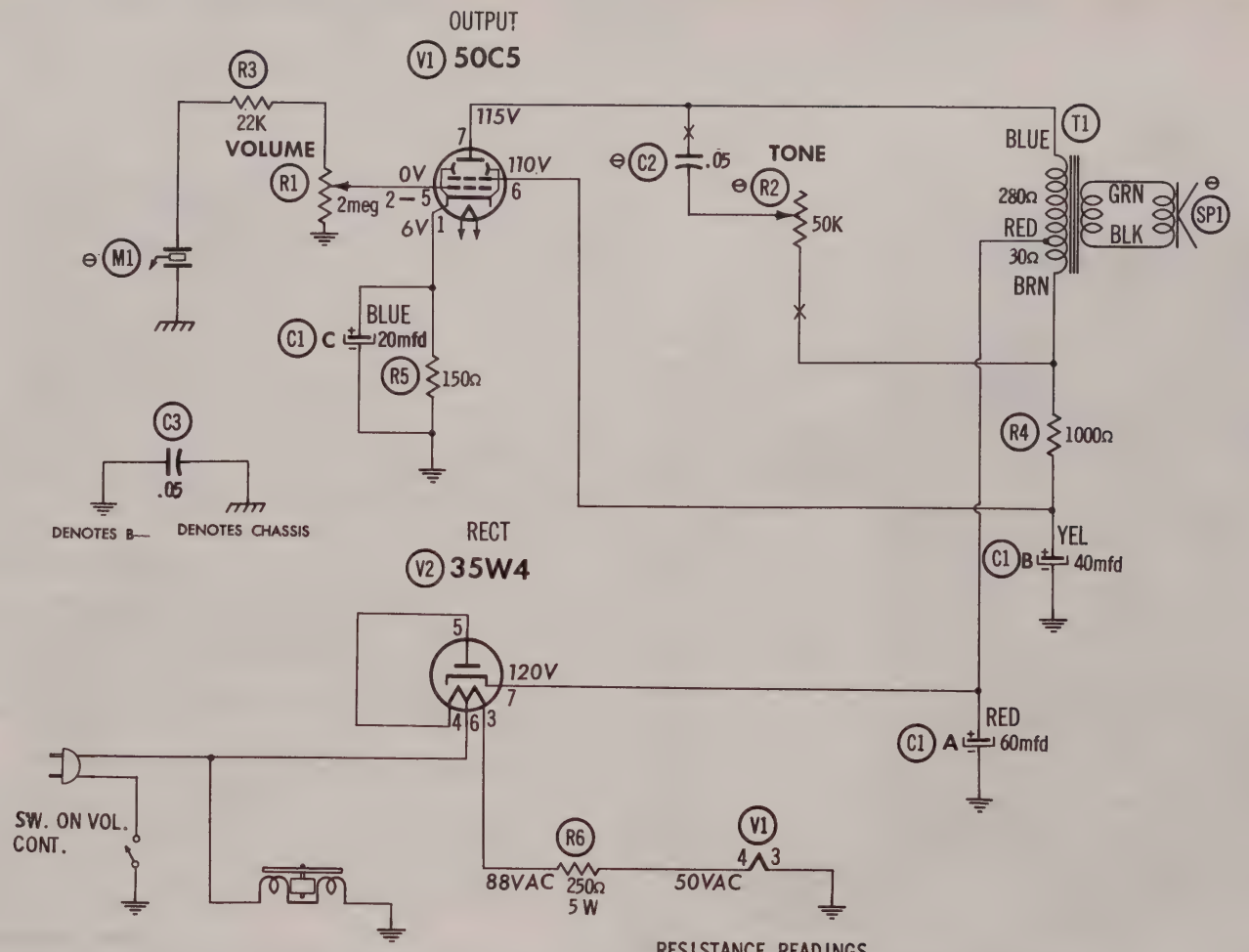
ITEM No.	REPLACEMENT DATA			REMARKS
	CRESCENT PART No.	JENSEN PART No.	WALCO PART No.	
M2		†CR-55LP or ♦CR-55LPD	†W-64MGS or ♦W-64MGD	* Metal † Jewel ♦ Diamond Used in models F-637, F-639, F-737, F-739.
	720072	*A-762 or †A-672 or ♦A-672D	*W-39AGA or †W-39AGS or ♦W-39AGD	Used in models A-740, A-4600.
	490108	*J-152 or †NY-252 or ♦J-252D	*WA400-2 or †WS400-2 or ♦W-400AGD	Used in models M-633, M-732.
	720064 (78RPM Needle) 720065 (33-45RPM Needle)	†CR-55 or ♦CR-55D and †CR-55LP or ♦CR-55LPD	†W-64S or ♦W-64D and †W-64MGS or ♦W-64MGD	Used in model M-734.

MISCELLANEOUS

ITEM No.	PART NAME	CRESCENT PART No.	NOTES
	Cabinet & Lid	440336	Model M-732
	Cabinet & Lid	440216	Model M-633
	Cabinet & Lid	440301	Model M-734
	Cabinet & Lid	440374	Model A-740
	Cabinet	440371	Model F-737.
	Knob	310364	Reject - Model A-4600.
	Knob	310006	Reject - Models F-639, F-637, F-739, F-737.
	Knob	310407	Reject - Model A-740.
	Knob	310182	Speed Selector - Model A-4600.
	Knob	310421	Speed Selector - Model A-740.
	Knob	310416	Size Selector - Model A-740.
	Knob	310353	On-Off Volume & Tone, Model A-740.
	Knob	310326	On-Off Volume & Tone, Models F-739, F-639.
	Knob	310191	On-Off Volume & Tone, Model A-4600.
	Knob	310380	On-Off Volume & Tone, Model F-737.
	Knob	310381	On-Off Volume & Tone, Model M-734.
	Knob	310218	On-Off Volume, Model M-732.
	Knob	310326	On-Off Volume, Model F-637.
	Knob	310381	On-Off Volume, Model M-633.

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	50C5	150Ω	0Ω	0Ω	50Ω	0Ω	†1000Ω	†280Ω
V2	35W4	TP	NC	300Ω	340Ω	340Ω	330Ω	15K

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM PIN 7 OF V2.
NC NO CONNECTION.
TP TIE POINT.

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GARRARD MODELS
RC 120, RC 120/4, RC 121, RC 121/4

GARRARD MODELS
RC 120, RC 120/4, RC 121, RC 121/4

GENERAL INFORMATION

The Garrard Models R.C. 120, R.C. 121, R.C. 120/4 and R.C. 121/4 are basically alike except that the R.C. 120/4 and R.C. 121/4 are four speed units.

The R.C. 120 Record Changer will automatically play any number of records up to ten, eight for the R.C. 121, of any one of the following types at each loading — 10" or 12" at 78 R.P.M., 7", 10" or 12" at 33 1/3 R.P.M., and 7" at 45 R.P.M. large center hole 7" 45 R.P.M. records can be played using the Garrard Record Spindle, Type LRS2. Provision is made in the R.C. 120/4 and R.C. 121/4 for playing 16 2/3 R.P.M. records.

Other than points mentioned, the models are identical and all references in this manual to the R.C. 120 also applys to the R.C. 120/4, R.C. 121 and R.C. 121/4 unless otherwise stated.

Both models are available in two versions — one fitted with a single voltage range motor suitable for use on 200/250 volts A.C., 50 or 60 cycles, the other being fitted with a dual range motor suitable for use on 100/130 volts A.C. or 200/250 volts A.C., 50 or 60 cycles.

Manufactured by:
Garrard Engineering & Mfg. Co., Ltd.
Newcastle Street
Swindon, Wilts - England

U.S. Distributor
Garrard Sales Corp.
80 Shore Road
Port Washington, New York

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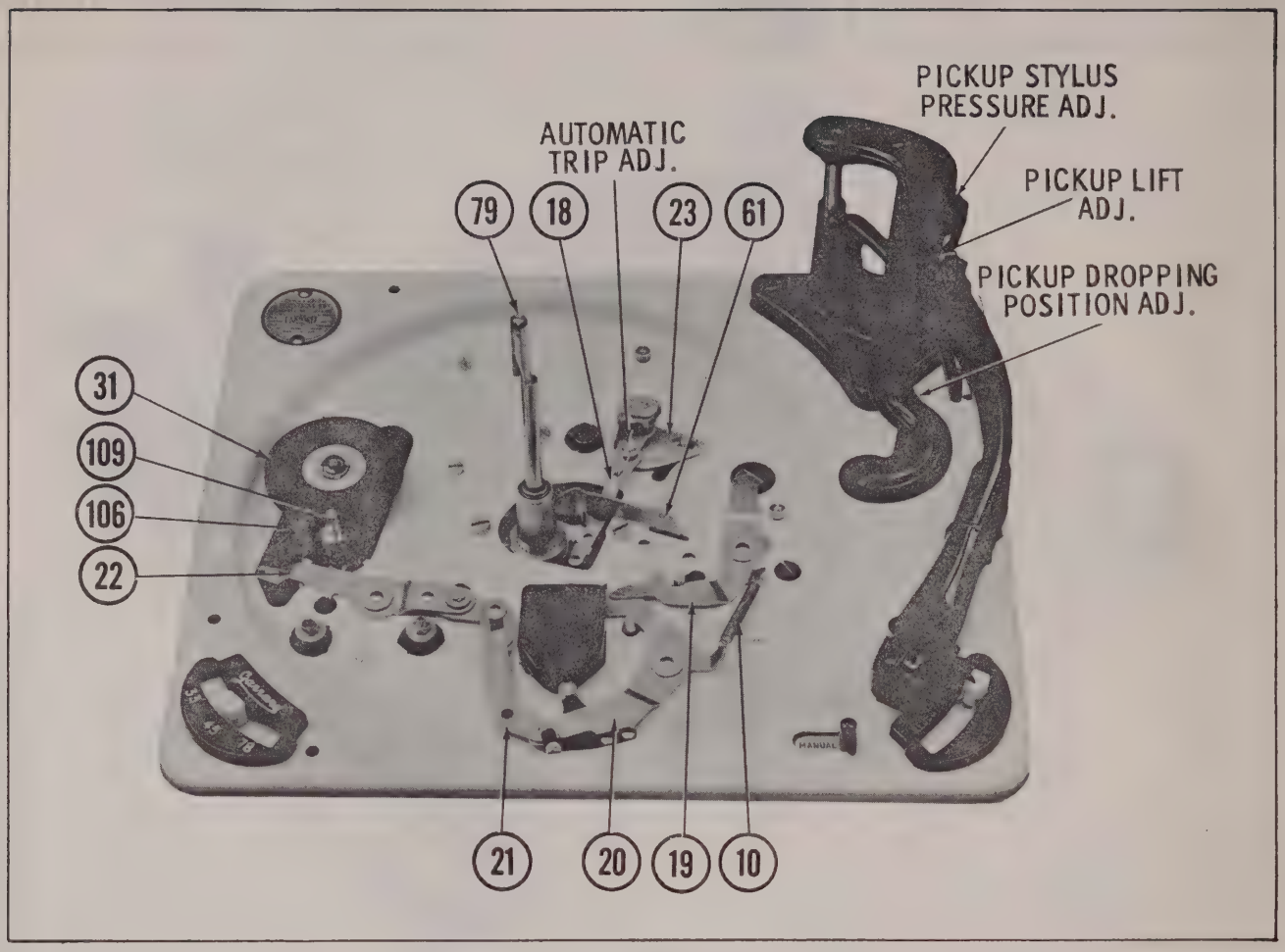

FIGURE 1

OPERATING INSTRUCTIONS

To Operate Changer Proceed As Follows:

1. Set correct stylus for type of record to be played.

2. Move speed change knob to desired speed.

3. Gently place records on record spindle and move overarm (1) inward.

4. Turn the record changer "On".

To Unload Changer-

1. To unload changer lift overarm (1) up and move to the right hand side.

2. Lift records straight up and off spindle.

Reject-

1. To reject a record move right hand knob to "Reject" position.

Stop-

If it is desired to stop the changer before it does so automatically, move right hand knob to "Stop" position. If this is done while a record is playing that record will be rejected on switching on again.

Manual Operation-

Move Manual/Auto knob to "Manual". Move right hand control knob to "Start". Turntable will commence to revolve and changer will operate until mechanism is in the "Manual" position, then the pickup arm will be on the pickup rest but with the pickup free to be placed on record by hand. Turntable will be revolving. Place records on turntable, carefully guiding it through contours of record spindle. Gently place pickup on record allowing the stylus to alight on the smooth outer edge of the record then the lead in groove will carry the stylus into the playing groove. At the end of the record the pickup will lift and return to the rest. Turntable will continue to revolve. To stop motor and turntable move right hand control knob to "Stop". To return to "Auto", move the Manual/Auto knob to "Auto". If this is done while a record is playing, at the end of the record the pickup will return to the pickup rest and the auto stop will switch off the unit.

CHANGE CYCLE

It is recommended that the change cycle operation be observed by rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

This changer is provided with what is known as velocity trip mechanism. The change cycle is started by the faster inward motion of the pickup arm when the needle enters the trip grooves at the end of the record. Only records having fast-finishing grooves will operate this trip.

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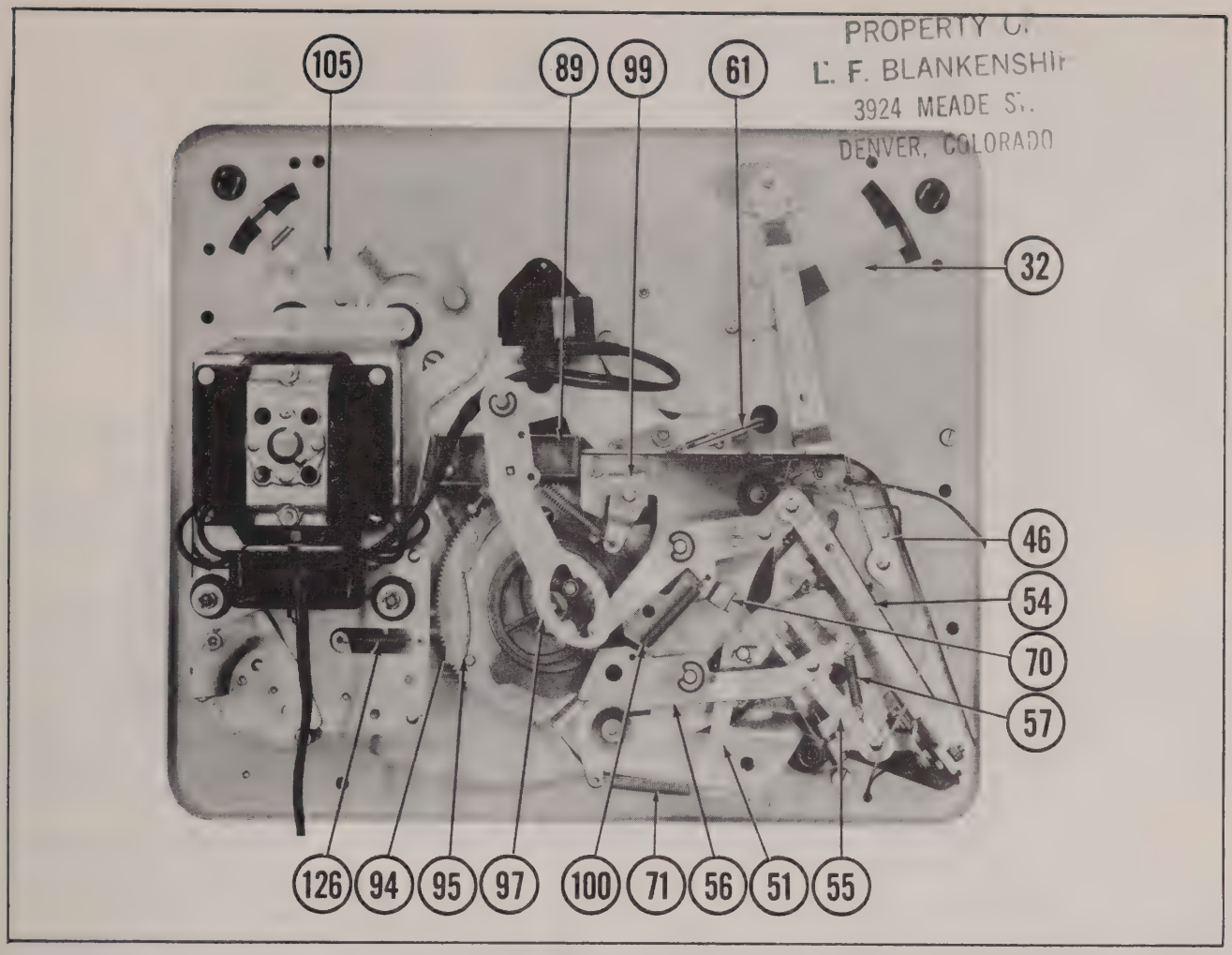

FIGURE 2

Sequence of change cycle with records on the record spindle. As the cam gear (94) commences to revolve the first motion is imparted by the lower cam to the lever (73) and this lever via lever (54) lifting disc (53) and lifting spindle (42) lifting pickup arm off the pickup rest. Next a peg protruding downward from the upper cam makes contact with and pivots the resetting lever (70) which in turn moves the selector lever (51) into the manual position. The peg revolving beyond the resetting lever (70) and releasing it next makes contact with and pivots the lever (56) this lever via the spring (57) pulls inward the lever (55). This lever in turn moves the selector lever (51) until the lever (55) is stopped by the record size selector arm (2) coming into contact with the edge of the records on the record spindle, the bottom of the spindle from the record size selector arm carrying the pivot of lever (55). At this point the selector lever (51) is in the correct position for the size of the record to be played. In order that the peg on the cam can continue to pivot the lever (56) after lever (55) has been stopped the spring (57) relaxes allowing the two levers a measure of independent movement. The lever (56) is so shaped that after the peg on the cam has pivoted it and so brought the record size selector arm (2) to the edge of the records on the record spindle, lever (56) is released quickly and under tension of spring (10) the record size selector arm is drawn clear of the record which is now due to drop to the turntable.

A peg on the lower cam (94) now commences to move the lever (97) which controls the record pushing pawl situated inside the record spindle. This pawl, the lower end of which protrudes downwards through a hole in lever (97), when pivoted by the lever (97) moves outward from its slot in the record spindle and pushes the lowest record off the step in the record spindle whereupon the record descends down the spindle to the turntable, the dispersion of air underneath the record acting as a cushion to ease the descent of the record. The remaining records on the record spindle press down the pawl until the lever (97), under the control of the peg on the lower cam, moves the pawl back into the slot in the record spindle then the pawl, under the controlling pressure of a small spiral spring (82) fitted on the lower end of the pawl and held in position by the face of lever (97), pops up inside the center hole of the next record ready to push that record off the spindle step in the next changing cycle.

Immediately the record has descended to the turntable, the contour of the upper cam commences to release the swing lever (68) which in turn releases the pickup arm mechanism thereby allowing spring to pull in the pickup arm until lever (48) is engaged by the step on the selector lever corresponding to the size of the record to be played. While the swing lever continue to move completely clear of the pickup arm complete freedom to play the record, the lower cam via lever (73), link (54), lifting pad (53) and lifting spindle (41) gently lowers the pickup on to the record. Immediately the pickup has been lowered to the record, the cam commences to tension the impulse lever, under pull from spring (98) which lever a frac-

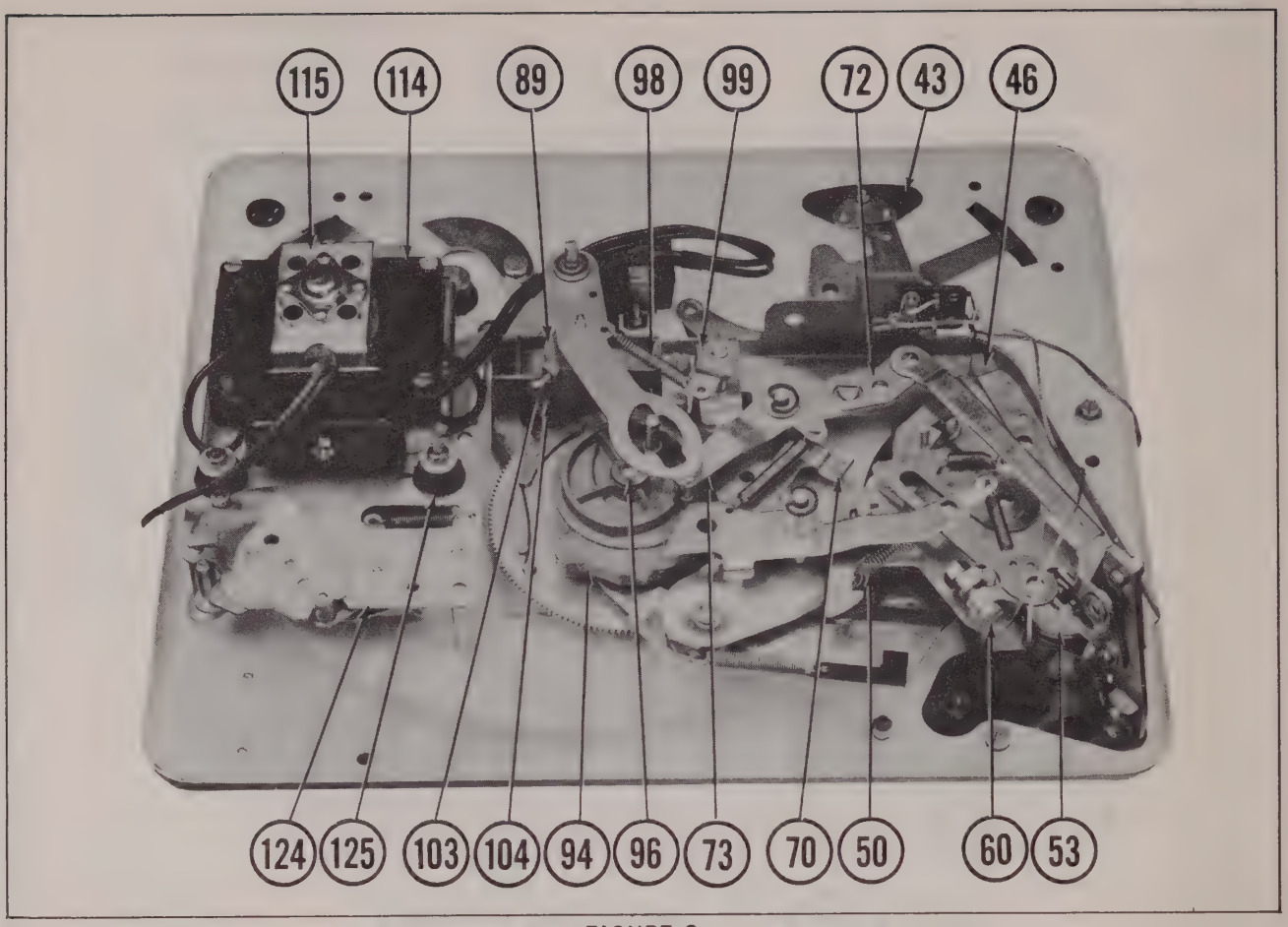

FIGURE 3

tion of a second later impulses the cam into the free position, the lever (61), dropping into the slot in the cam gear plate to hold it in this position leaving the turntable free to revolve and play the record.

Final Switch-Off Mechanism-

If there are no records on the record spindle the lever (55) moves right in moving the selector lever (51) for enough to engage the swing lever (68) thus preventing the swing lever (68) from following the usual playing track in the cam unit (94) and causing it to travel round the outer switch-off track instead. In this track there is a high node which moves swing lever (68) a little more than when records prevent the switch-off arm traveling right in. This extra movement engage lever (68) with the formed end of the catch lever (19) giving it a slight push which releases the switch lever (20) from the slot in the end of the catch lever (19) thus switching off motor and applying the turntable brake.

Speed Change Mechanism-

The speed change is effected by means of a series of lever, controlled by the speed change knob, which move the position of the intermediate wheel (31) in relation to the stepped motor pulley (109). The controlling factor of the speed obtained is in the size of the steps of the pulley. The diameter of the intermediate wheel having no relation.

Auto Trip-

The automatic trip mechanism fitted to the R. C. 120 record changer operates on the velocity principle, i. e. it is brought into operation by the acceleration of the pickup as the stylus enters the run off or eccentric groove on the record.

When playing a record, the operating lever (18) is moved towards the turntable spindle by the movement of the pickup arm, and is set to come within the orbit of the striker on the turntable spindle when the stylus point has reached a radius of 2 7/ 8" from the turntable spindle center. As the pickup arm moves inward lever (36) being attached to the pickup spindle (42) also moves inward. The lever (42) makes contact with one end of the V shaped inter-lever (64) and commences to move it. The other end of V shaped interlever carries a pin which passes up through the unit plate and is linked to the friction plate (23) which in turn slowly moves under the impulse of the tracking pickup. The operating lever (18) is delicately pivoted on the friction plate and is moved by the friction between the surface of the friction plate and the small felt pad in the bottom of the screw (18A) in the operating lever. This screw is easily recognisable by the spring clip surrounding it. As the friction plate is moved inward it carries in the operating lever (18) until the felt pad in the end of the operating lever nearest to the turntable spindle comes within the orbit of the revolving striker on the turntable spindle. As long as the pickup is only advancing towards the center at the rate of one playing groove per revolution of the turntable, the felt pad is brushed back by the striker

out of its orbit, the delicate friction drive between the felt pad in the screw and the surface of the friction plate relaxing to allow the two movements to take place together. When the pickup enters the run off grooves on the record the increase velocity imparted to the pickup and from the pickup via the lever previously mentioned to the operating lever, moves the felt pad in the operating lever (18) completely inside the orbit of the striker which now, instead of brushing the pad back out of its orbit, passes underneath the clip holding the felt pad and lifts up the operating lever. The operating lever then in turn lifts lever (61) which releases the cam gear and impulse lever so recommencing the changing cycle.

ADJUSTMENTS

Auto Trip Adjustment-

The auto trip mechanism is the velocity type, that is, it operates by the quick inward movement of the pickup arm when the pickup reaches the quick run off groove at the end of the record. It is designed to be very light and sensitive in operation and is set to commence operation when the stylus reaches a 2 3/4" radius. If the auto trip fails to operate the pickup will remain running in the center of the record and to correct this, raise the auto trip lever (18) by giving the adjustment screw (18A) for height of auto trip lever (18), Figure 1, about half a turn in a clockwise direction. This will raise the auto trip lever (18) and enable it to engage the cam on the striker when the pickup runs into the record run off groove.

Pickup Lift Adjustment-

The distance the pickup lifts can be adjusted by turning the screw on top of pickup arm with a small screwdriver. Ten 12" 78 R.P.M. records should be placed on the turntable (8 for R.C. 121) and the pickup height adjusted so that as the pickup (3) returns to the rest completion of the top record, the tip of the pickup stylus clears the record surface by 1/8".

If found necessary, further adjustment may be obtained by turning the eccentric screw in lever (73) accessible underneath the changer.

Pickup Dropping Position Adjustment-

The pickup dropping position is factory set for optimum accuracy. Should any minor adjustment be required, rotate the adjusting screw accessible through a hole in the unit plate, Figure 1, to give the correct position.

Pickup Stylus Pressure Adjustment-

When playing microgroove records it is important that the stylus pressure should not exceed 10 grams and it is recommended that the stylus pressure be checked when setting up the changer for use after having carried out any adjustment. The stylus pressure can be adjusted by turning the screw at the rear of the pickup arm, Figure 1, to which the counterbalance spring is attached. This screw should be turned clockwise to reduce pressure and counterclockwise to increase it.

TROUBLES

Speed Variation-

Should the speed vary during playing, remove the turntable, and examine the motor pulley, intermediate wheel and inside of turntable rim for traces of oil and if necessary wipe thoroughly with a clean cloth. Also check that the motor pulley is in its correct position on the motor shaft, switch the changer on and see that the intermediate wheel runs in the center of the appropriate step on the pulley and does not foul the side of the adjacent step; if necessary loosen the screw holding pulley to shaft and move pulley to its correct position.

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Turntable Brake Fails-

The turntable brake, (part of item 20) check the movement of the turntable by applying a felt pad to the turntable rim when the unit switches off. If it fails, inspect the felt pad and if this is worn or has moved flush with the surface of the brake lever (20), push it through the curl in the lever until it protrudes approximately 3/32" then slightly tighten the curl with a pair of pliers. If the felt pad is too badly worn it should be replaced.

Records Fail To Drop-

Should records fail to drop, first make sure that they are not badly warped and that their center holes are in good condition and not worn. If these points are in order, check that the record pushing pawl is engaging correctly in the record center hole. The pawl is spring loaded and after pushing a record off the spindle step is pushed down by the weight of the records remaining on the spindle.

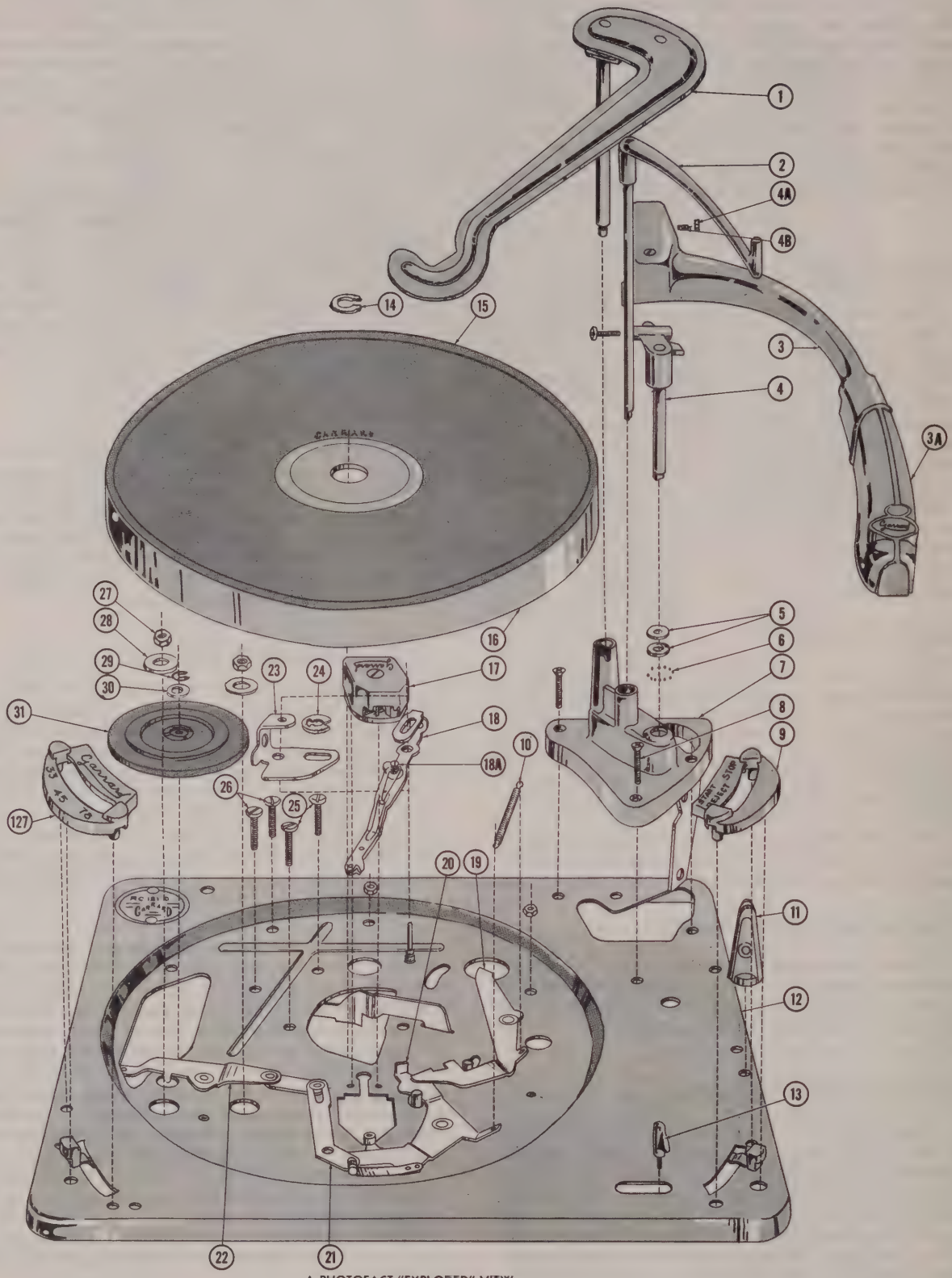
Pickup Fails To Track Correctly-

Should trouble be experienced with the pickup failing to track correctly, i.e., it jumps out of the record groove or has a tendency to rise in the groove, giving rise to distortion of the reproduction, each of the undermentioned points should be carefully checked.

1. Make sure that the unit is correctly mounted and floating freely on its spring suspensions. Check the level of the unit by placing a torpedo level on a record on the turntable and if out of true, adjust the spring suspensions as necessary.

2. Check the pickup lead where it emerges from the rear of the pickup arm and passes down through the unit plate, to ensure that it has not been pulled tight or twisted, or is in any way touching the changer mechanism and creating a bias on the free movement of the pickup arm. Check that the pickup arm is quite free in both its vertical and lateral movements. If the vertical movement appears sluggish, adjust the pivot at the rear of the pickup arm in the following manner: Loosen the lock nut (4A) and loosen the set screw (4B) a slight amount, tighten the screw to be found on the other side of the pivot to its fullest extent, retighten the set screw (4B) as far as it will go, then releasing this screw approximately 1/8th of a turn, hold it in this position and carefully retighten the locknut (4A). The pickup arm should now pivot quite freely.

3. Make sure that the stylus pressure is set at the recommended 10 gram for microgroove and turnover pickup heads and also that the correct stylus is presented to the record surface for the type of record being played.



A PHOTOFACT "EXPLODED" VIEW
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FIGURE 4A. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

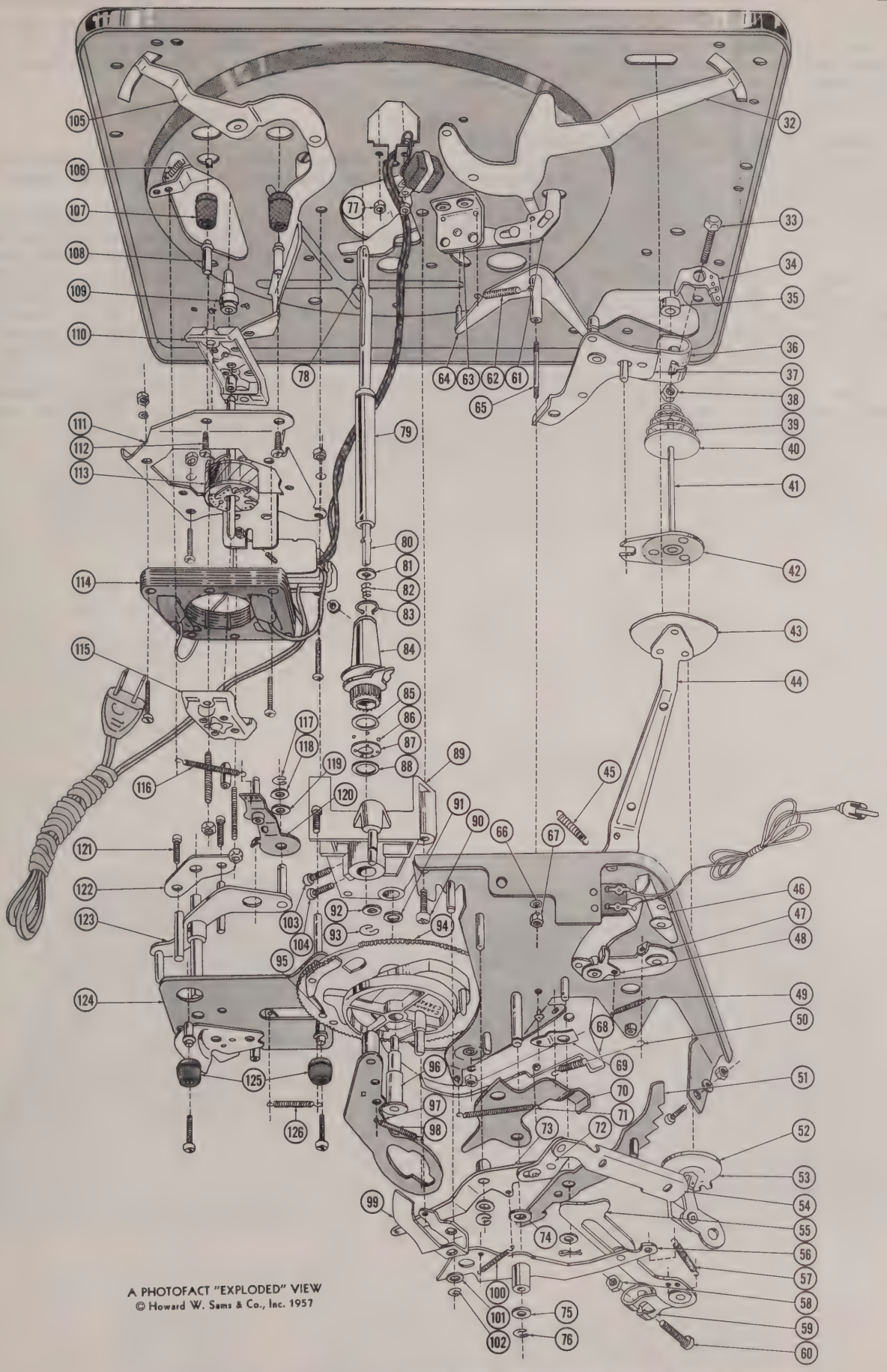

FIGURE 4B. EXPLODED VIEW OF PARTS BELOW BASEPLATE.

Noise-

Should the changer become noisy when running, the cause may be dry bearings. The changer should be lubricated with fine machine oil. All surplus oil must be carefully wiped off.

Flat on the rubber tire of the intermediate wheel will cause a bumping noise when the unit is running and to cure this, the intermediate wheel should be replaced. The flats can be caused by holding the turntable stationary with the motor switched on and this should be avoided.

A grating noise from the motor may be due to foreign matter in the air gap between the rotor and stator. To correct this, first remove the motor pulley, unscrew the two nuts holding the bottom rotor bearing bracket and withdraw the rotor.

Clean the rotor and the tunnel in the stator and carefully examine for small metal chips. A metal chip causing a grating noise may not be too easy to see as it sometimes rest against the laminations and only projects when the current is switched on. Clean the bearing and before replacing the rotor, put a drop of fine machine oil on the bearing surfaces of the shaft.

LUBRICATION

The motor and intermediate wheel bearings being of the oil retaining type rarely need lubricating.

When the need for oil is apparent, hold the intermediate wheel out of the way and lubricate the top and bottom motor bearings with a drop of a fine grade of light machine oil. Care should be taken to remove all traces of surplus oil before running the unit. It is essential that the intermediate wheel rubber tire, motor pulley and inside of turntable rim be kept free from oil or grease, otherwise the drive will slip.

It is recommended that occasionally a smear of light grease, be applied to all cam faces, and all lever pivots lightly lubricated.

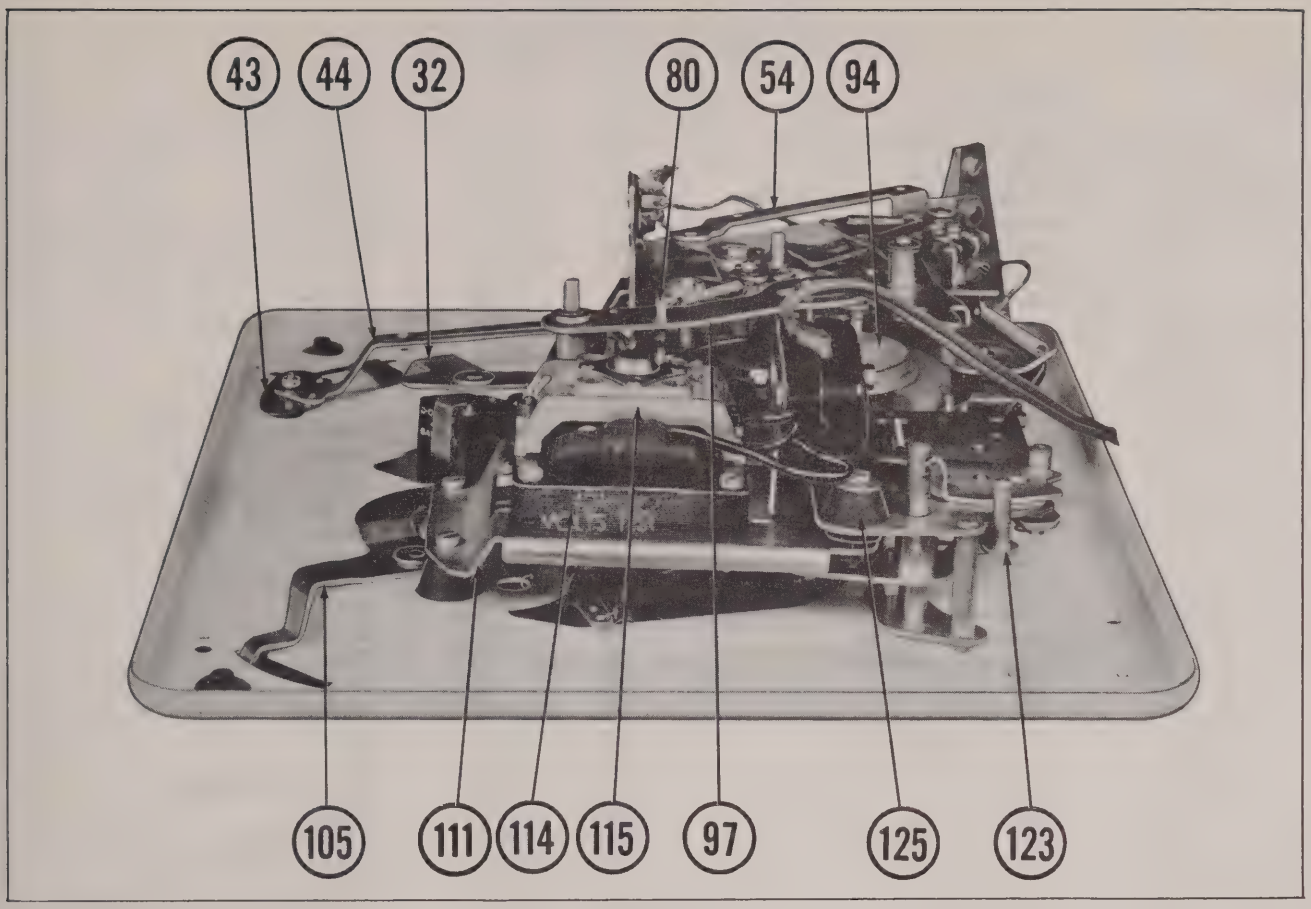

FIGURE 5

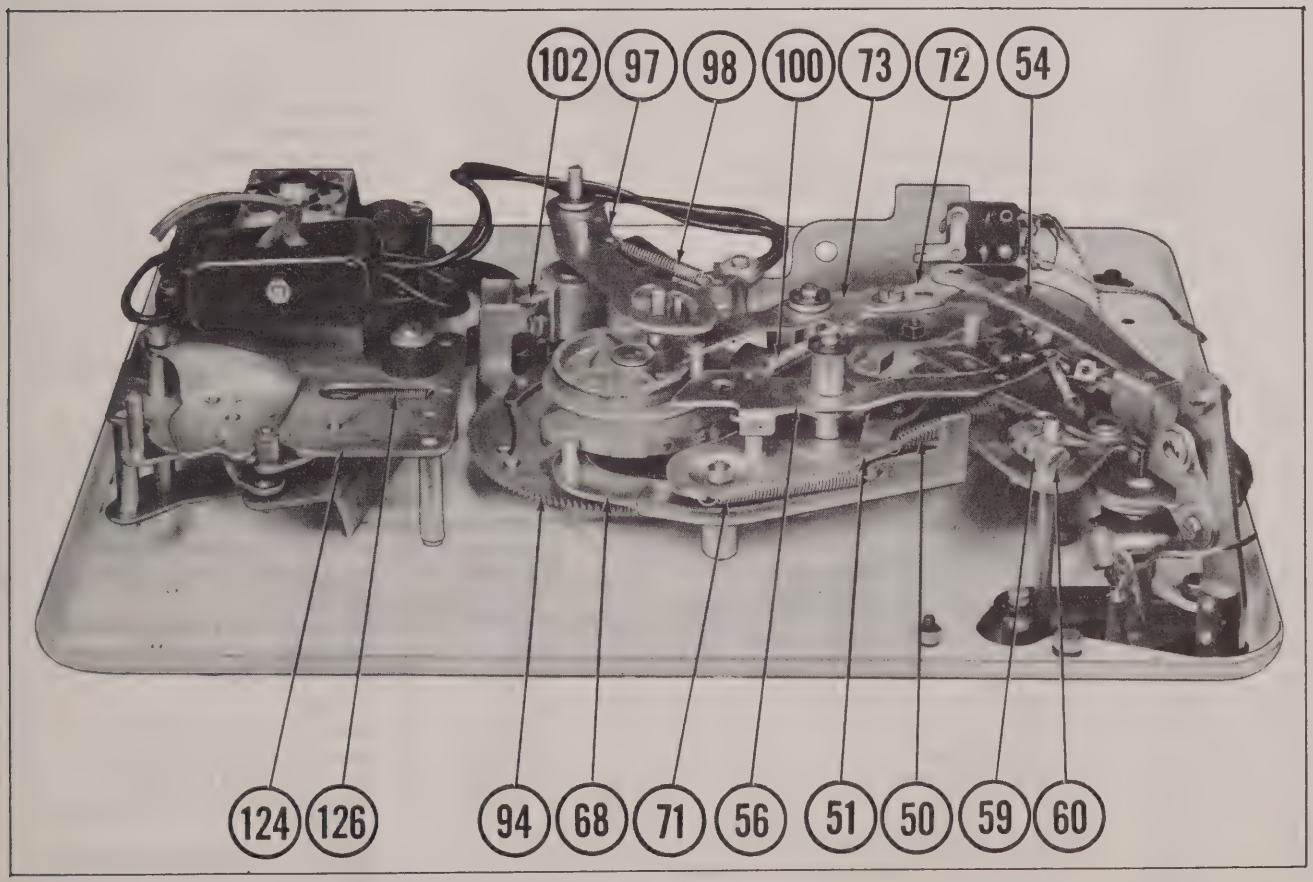

FIGURE 6

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	B. 52818	Overarm Unit
2	A. 52647	Selector Arm
3	B. 52618	Pick-up Arm (Model RC120)
	B. 52902	Pick-up Arm (Model RC121)
3A		Multi-Purpose Pickup Case MPM/2
4	A. 52669	Pick-up Spindle Unit
5	A. 40759	Washer
6	A. 43204	Ball Bearings
7	C. 52623	Pick-up Base
8	A. 40486	Screws
9	C. 52523	Control Cover
10	A. 41631	Spring
11	C. 52063	Pick-up Rest
12	C. 52503	Unit Plate
13	A. 47438	Knob
14		Turntable Retainer
15	C. 51286	Turntable Cover
16	B. 53394	Turntable Unit
17	B. 51322	Switch Block
18	A. 51322	Trip Lever Consists of:
	A. 48834	Felt Pad
	A. 48724	Pad Clip
	A. 41735	Locking Spring
	A. 48836	Friction Pad Cup
	A. 46389	Friction Plate
19	A. 52515	Catch Lever
20	B. 53232	Switch Lever Unit
21	A. 52512	Tension Link
22	A. 52514	Tension Lever
23	A. 52552	Friction Plate
24	A. 41723	Spring Clip
25	A. 40183	Screws
26	A. 40182	Screws
27	A. 41012	Nut
28	A. 42501	Spring Washer
29	A. 41723	Spring Clip
30	A. 40773	Washer
31	B. 52567	Intermediate Wheel 3 Speed
	B. 58883	Intermediate Wheel 4 Speed
32	A. 52505	Control Lever Unit
33	A. 40185	Screw
34	A. 51338	Anchor Bracket
35	A. 51351	Collar
36	A. 53464	Pick-up Lever
37	B. 53467	Pick-up Setting Lever
38	A. 41030	Nut
39	A. 41740	Lifting Spring
40	A. 52725	Locating Cup
41	A. 51249	Lifting Spindle
42	A. 51249	Lifting Washer
43	A. 52882	Manual Plate
44	A. 52858	Manual Lever
45	A. 41631	Spring
46	A. 52838	Manual Catch Lever Unit
47	A. 52971	Inter Selector Lever Unit
48	A. 50790	Selector Pawl
49	A. 41670	Spring
50	A. 41698	Spring
51	A. 52689	Selector Lever Unit
52	A. 40609	Friction Washer
53	A. 46731	Lifting Disc
54	A. 52551	Lifting Link
55	A. 51272	K.O. Link
56	A. 52636	K.O. Cam Lever Unit
57	A. 41630	K.O. Spring
58	A. 41006	Nut
59	A. 51273	K.O. Lever
60	A. 40018	Screw
61	A. 52517	Stop Lever
62	A. 41759	Spring
63	A. 52518	Stop Lever Bracket
64	A. 52542	Inter Lever Unit
65	A. 47153	Pillars
66	A. 42501	Spring Washer
67	A. 41012	Nut
68	A. 52591	Swing Lever Unit
69	A. 41708	Friction Spring
70	A. 52632	Resetting Lever Unit
71	A. 41508	Spring
72	A. 52550	Lift Adjusting Lever
73	A. 52548	Lifting Cam Lever Unit
74	A. 40695	Washer
75	A. 40695	Washer
76	A. 41621	Spring Clip
77	A. 41008	Nut
78	A. 51279	Latch
79	B. 52727	Fixed Spindle
80	B. 52453	Pawl
81	A. 40791	Washer
82	A. 41689	Spring
83	A. 41709	Spring Clip
84	A. 52498	Turntable Spindle
85	A. 40713	Washer
86	A. 43201	Ball Bearing
87	A. 51224	Cage For Ball Race
88	A. 40804	Washer
89	B. 52557	Turntable Spindle Housing
90	A. 40183	Screw
91		Washer
92	A. 40504	Washer
93	A. 41621	Spring Clip
94	B. 52530	Cam and Gear
95	A. 41576	Segment Spring for Cam Unit.
96	A. 50732	Cam Stud
97	A. 52534	Release Lever Unit
98	A. 41506	Spring
99	A. 52541	Impulse Lever
100	A. 41631	Spring
101	A. 40504	Washer
102	A. 41696	Spring Clip
103	A. 40155	Screw
104	A. 40488	Screw
105	A. 52520	Speed Control Lever Assembly
106	A. 41688	Spring
107	A. 43109	Grommets
108	A. 49576	Bushing
109	A. 50896/2	Pulley 60 Cycles, 3 Speed
	A. 53954	Pulley 60 Cycles, 4 Speed
	A. 50897/2	Pulley 50 Cycles, 3 Speed
	A. 53953	Pulley 50 Cycles, 4 Speed
110	B. 52680	Motor Cover (Top) Assembly (H. 22).
		Motor Cover (Top) Assembly (D. 22)
111	B. 52561	Motor Bracket
112	A. 40215	Screws
113	A. 50649a	Rotor and Shaft 3 Speed
	A. 53718a	Rotor and Shaft 4 Speed
114	A. 50642	Stator Pack Assembly
115	B. 52678	Motor Cover (Bottom) Ass'y. (H. 22)
		Motor Cover (Bottom) Ass'y. (D. 22)

MECHANICAL PARTS LIST (Con't.)

Ref. No.	Part No.	Description		Ref. No.	Part No.	Description
116	A. 41688	Spring		123	A. 52568	Support Lever Assembly
117	A. 41696	Spring Clip		124	A. 52714	Mounting Plate Ass'y. 3 Speed
118	A. 40504	Washer			A. 53876	Mounting Plate Ass'y. 4 Speed
119	A. 40535	Washer		125	A. 43109	Grommets
120	A. 52565	Support Plate		126	A. 41630	Index Lever Spring
121	A. 40182	Screw		127	C. 52524	Speed Cover (3 Speed)
122	A. 51319	Top Plate				Speed Cover (4 Speed)

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KNIGHT
MODEL 94SX706

KNIGHT
MODEL 94SX706

TRADE NAME	Knight Model 94SX706
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
TYPE SET	AC Operated Equalizer Preamplifier
TUBES (Three)	Types 12AX7 Preamplifier, 12AX7 Cath. Follower - 1st AF Amp., 6C4 2nd AF Amplifier
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .15 Amp. @ 117 Volts AC (7 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

KNIGHT
MODEL 94SX706

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Phono — Mic Preamplifier	12AX7	
V2	Cathode Follower-1st AF Amplifier	12AX7	

ITEM No.	USE	TYPE	NOTES
V3	2nd AF Amplifier	6C4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■30	150		AFH3-08	C0070	FP225	TMD-7	T-025	TVL-3535
B	▲15	150				TC47	TD-16-150		
C	15	150							
C2A	10	150		AFH3-22	C0210	FP330.5	TMT-22	T-095	TVL-3432.8
B	▲10	150							
C	■10	150							
C3	35	50		PRS150V40	BR505	TC39	TD-50-50	FM-0550	TVA-1308

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

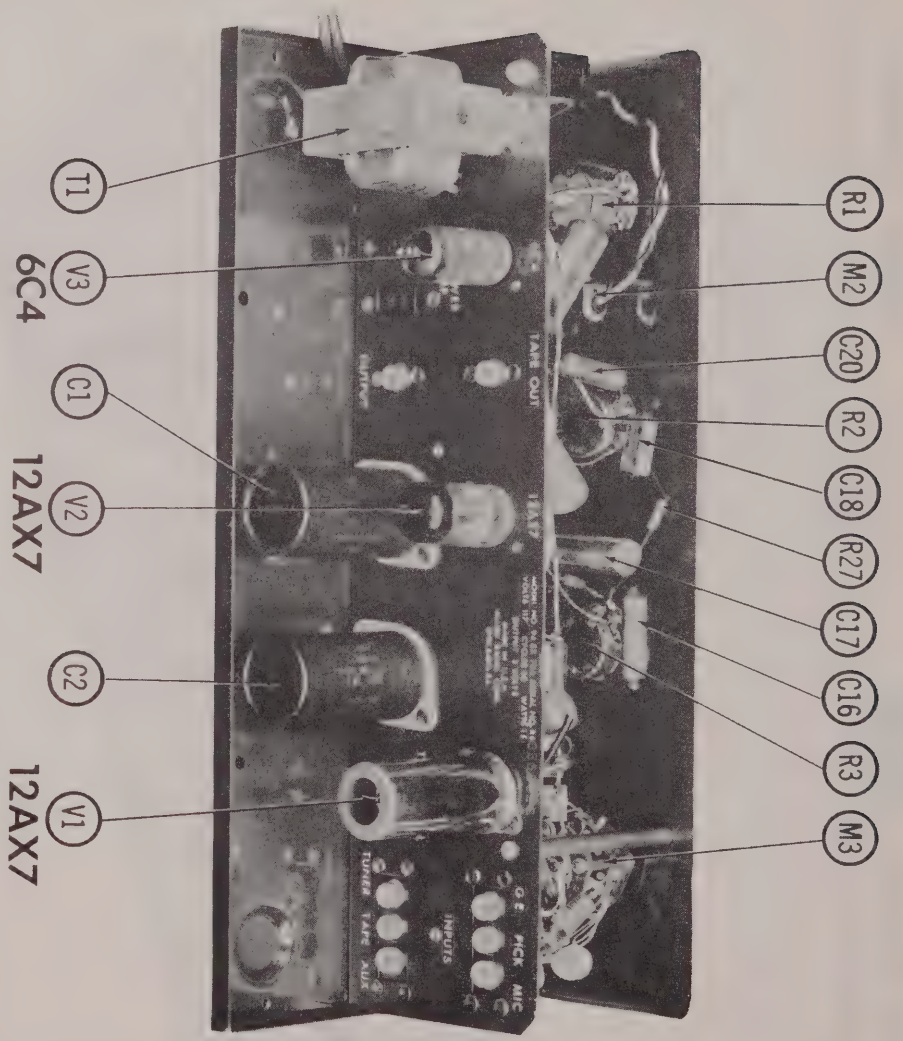
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	Note 1
C5	39	1000								
C6	.0068	600		BPD-0068	D6-682	CUB6D68	GP-6800	GEM-6268	6TM-D68	
C7	2200			BPD-0022	D6-222	K073	ED-0022	UC-5222	5GA-D22	
C8	1000			BPD-001	DD-102	K069	ED-001	DC-521	5HK-S1	
C9	560			S1560	DD-561	G063	ED-560	UC-5356	5GA-T56	
C10	4700			BPD-0047	DD-472	K079	ED-0047	UC-5247	5HK-D47	
C11	270			BPD-00027	DD-271	G054	ED-270	UC-5327	5GA-T27	
C12	.01	600		BPD-01	DD-103	CUB6S1	ED-01	GEM-611	6TM-S1	
C13	.022	200		BPD-02	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C14	.022	200		BPD-02	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C15	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C16	.0056	600								
C17	.056	600								
C18	15	500		1468-000015	DD-150		ED-15	UC-5415	1FM-415	
C19	330			BPD-00033	DD-331	G056	ED-330	UC-5333	5GA-T33	
C20	.0033	600		BPD-0033	D6-332	CUB6D33	ED-0033	GEM-6233	6TM-D33	
C21	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C22	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C23	.1	600		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C24	.02	600		BPD-02	DD-203	CUB6S2	ED-02	GEM-612	6TM-S2	

Note #1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½		AB-59	A47-500K-S	Q11-133	U50	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R2A	500K	½		AB-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R3A	500K	½		AB-60	A47-500K-Z	Q13-133	U48	Bass
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R4A	500K	½		AB-60	A47-500K-Z	Q13-133	U48	Tuner Level
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R5	27K			BTS-27K	
R6	22K			BTS-22K	
R7	470K			BTS-470K	
R8	68K			BTS-68K	
R9	68K			BTS-68K	
R10	68K			BTS-68K	
R11	68K			BTS-68K	
R12	100K			BTS-100K	
R13	150K			BTS-150K	
R14	100K			BTS-100K	
R15	220K 1%			DCC-220K1%	
R16	4700Ω 5%			BTS-4700 5%	
R17	4700Ω			BTS-4700	
R18	470K			BTS-470K	
R19	47K 5%			BTS-47K 5%	
R20	1500Ω 5%			BTS-1500 5%	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	KNIGHT PART No.	IRC PART No.	
R21	3.3Meg			BTS-3.3Meg	
R22	4700Ω			BTS-4700	
R23	22K			BTS-22K	
R24	4700Ω			BTS-4700	
R25	47K			BTS-47K	
R26	4700Ω			BTS-4700	
R27	47K			BTS-47K	
R28	68K			BTS-68K	
R29	3000Ω 5%			BTS-3000 5%	
R30	22K			BTS-22K	
R31	3300Ω			BTS-3300Ω	
R32	4700Ω			BTS-4700	
R33	4700Ω			BTS-4700	
R34	4700Ω			BTS-4700	
R35	2200Ω			BTS-2200	
R36	4.7Ω			BW ½-4.7	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .15A	120VAC @ .002A	6.3VCT @ .72A		LP-0243		P-3046①		26R32 ①	

① Drill New Mtg. Hole.

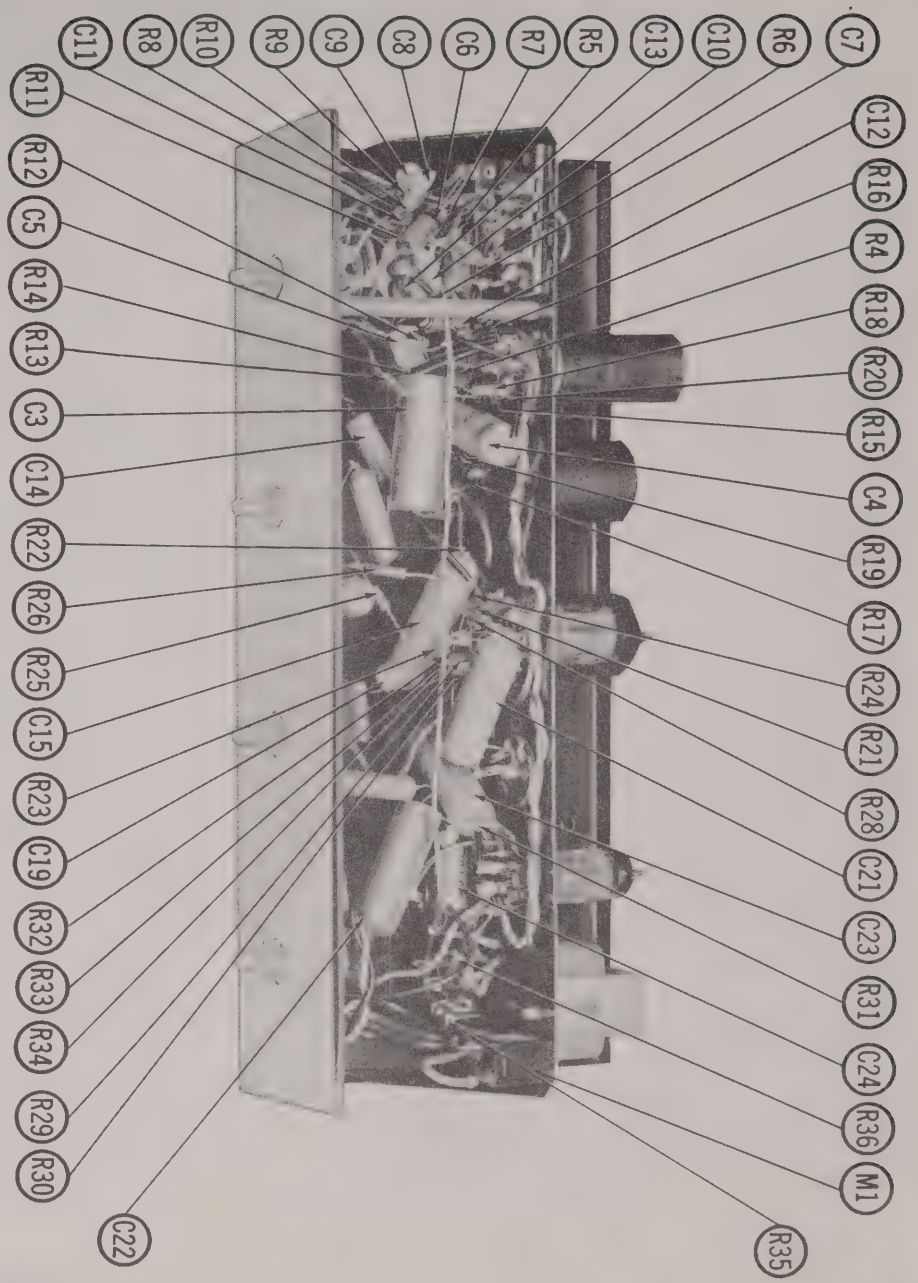
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	KNIGHT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.002A	JR-0022	1386	RS-050	8S20	8Y1	50	

MISCELLANEOUS

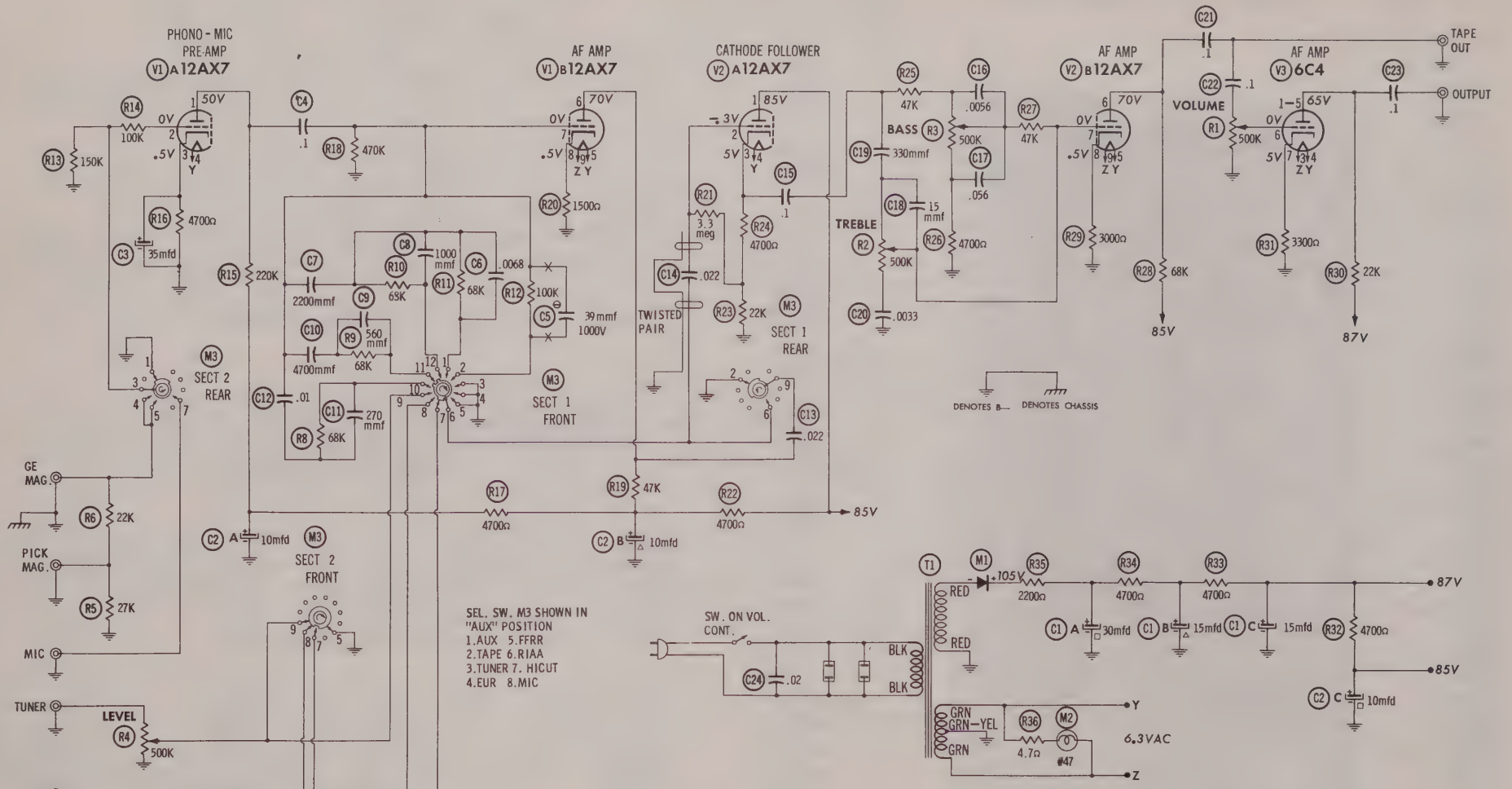
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M2	Dial Lamp		#47
M3	Switch		Function Selector, 2 Gang, Wafer Type

CHASSIS—BOTTOM VIEW



KNIGHT MODEL 94SX706

KNIGHT MODEL 94SX706



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†245K	100K	4700	.1Ω	.1Ω	†65K	470K	1500Ω	.1Ω
V2	12AX7	†16K	3.3Meg	27K	.1Ω	.1Ω	†85K	50K	3000Ω	
V3	6C4	†33K	NC	.1Ω	.1Ω	†33K	0Ω	3300Ω		

ALL MEASUREMENTS TAKEN IN "AUX" POSITION.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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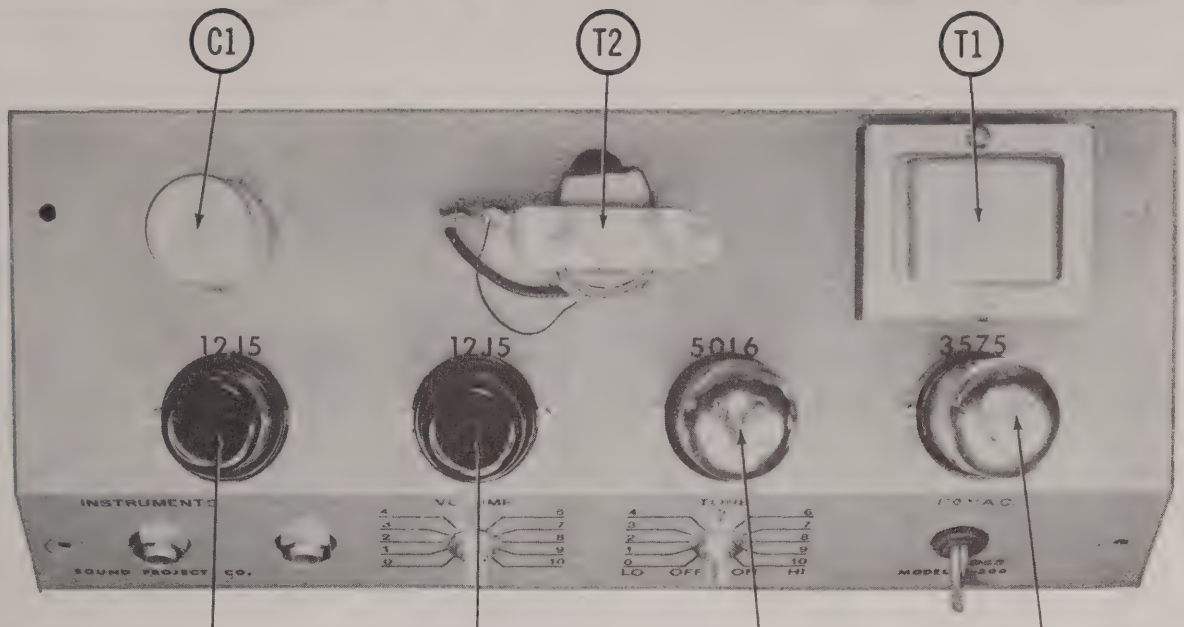
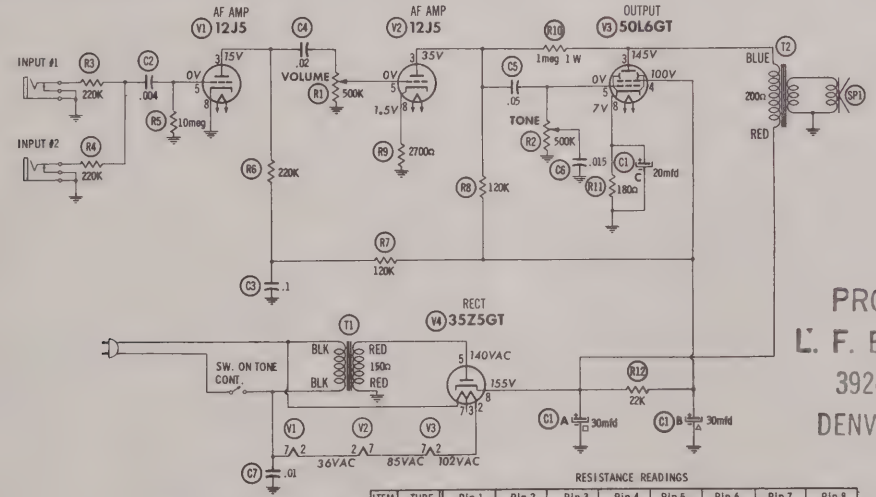


TRADE NAME	Lectrolab Model R-200
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago 9, Ill.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (Four)	Types 12J5 Preamplifier, 12J5 AF Amplifier, 50L6GT Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .280 Amp. @ 117 Volts AC



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12J5	0Ω	*100Ω	†360K	NC	10Meg	TP	*110Ω	0Ω
V2	12J5	0Ω	*100Ω	†140K	NC	0Ω	NC	*85Ω	2700Ω
V3	50L6GT	NC	*35Ω	†200Ω	†22K	500K	NC	*85Ω	180Ω
V4	35Z5GT	NC	*35Ω	30Ω	NC	150Ω	TP	*0Ω	15K

† MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION.
TP TIE POINT.
* MEASURED FROM PIN 7 OF V4

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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355-6

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12J5	
V2	AF Amplifier	12J5	
V3	Output	50L6GT	
V4	Rectifier	35Z5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	LECTROLAB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■30	250		AFH3-89	C0670	FP331	TMT-74	T-340	TVL-3620
B	▲30	250							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	LECTROLAB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.004	400		BPD-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C3	.1	200		P288N-1	DF-104	CUB2P1		PT401	2TM-P1	
C4	.02	400		BPD-02	DF-203	CUB4S2	817-02	PT412	4TM-S2	
C5	.05	200		BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C6	.015	200		BPD-015	DD16-153	CUB4S15	821-015	PT4115	4TM-S15	
C7	.01	400		BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LECTROLAB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	BA211-1274	AB-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
R2A	500K	½	BA012-240	AB-60	A47-500K-Z	Q13-133	U48	Tone
B	Shaft			AK-4	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	LECTROLAB PART No.	IRC PART No.	
R3	220K			BTS-220K	
R4	220K			BTS-220K	
R5	10Meg			BTS-10Meg	
R6	220K			BTS-220K	
R7	120K			BTS-120K	
R8	120K			BTS-120K	
R9	2700Ω			BTS-2700	
R10	1Meg	1		BTA-1Meg	
R11	180Ω			BTS-180	
R12	22K			BTS-22K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .15A	150VAC @ .038A							22R12 ①	

① Tape 6.3V Winding. Drill New Mounting Holes.

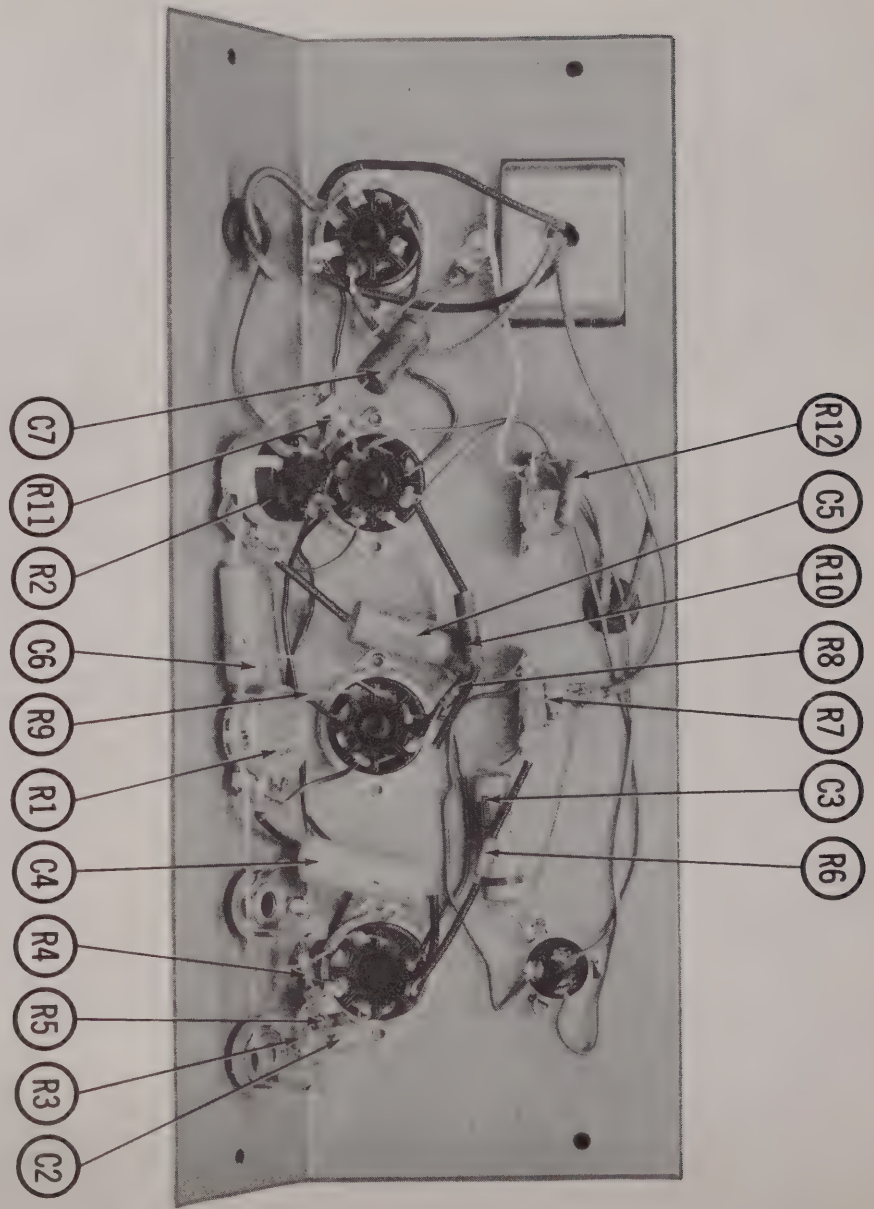
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LECTROLAB PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2750Ω	3-4Ω		Z1001	A-3031 ①	A-3876	22S46	S-1X	① Drill New Mtg. Hole. Tape Hum Bucking Tap

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LECTROLAB PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	S-152	8A21	

CHASSIS—BOTTOM VIEW



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DENVER, COLORADO

MOTOROLA MODELS
57A1, 57A2, 57A3 (Ch. HS-521)

MOTOROLA MODELS
57A1, 57A2, 57A3 (Ch. HS-521)

TRADE NAME	Motorola Models 57A1, 57A2, 57A3 (Ch. HS-521)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Ill.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.3 Amp. @ 117 Volts AC (27 Watts)
TUNING RANGE—BROADCAST	535KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"

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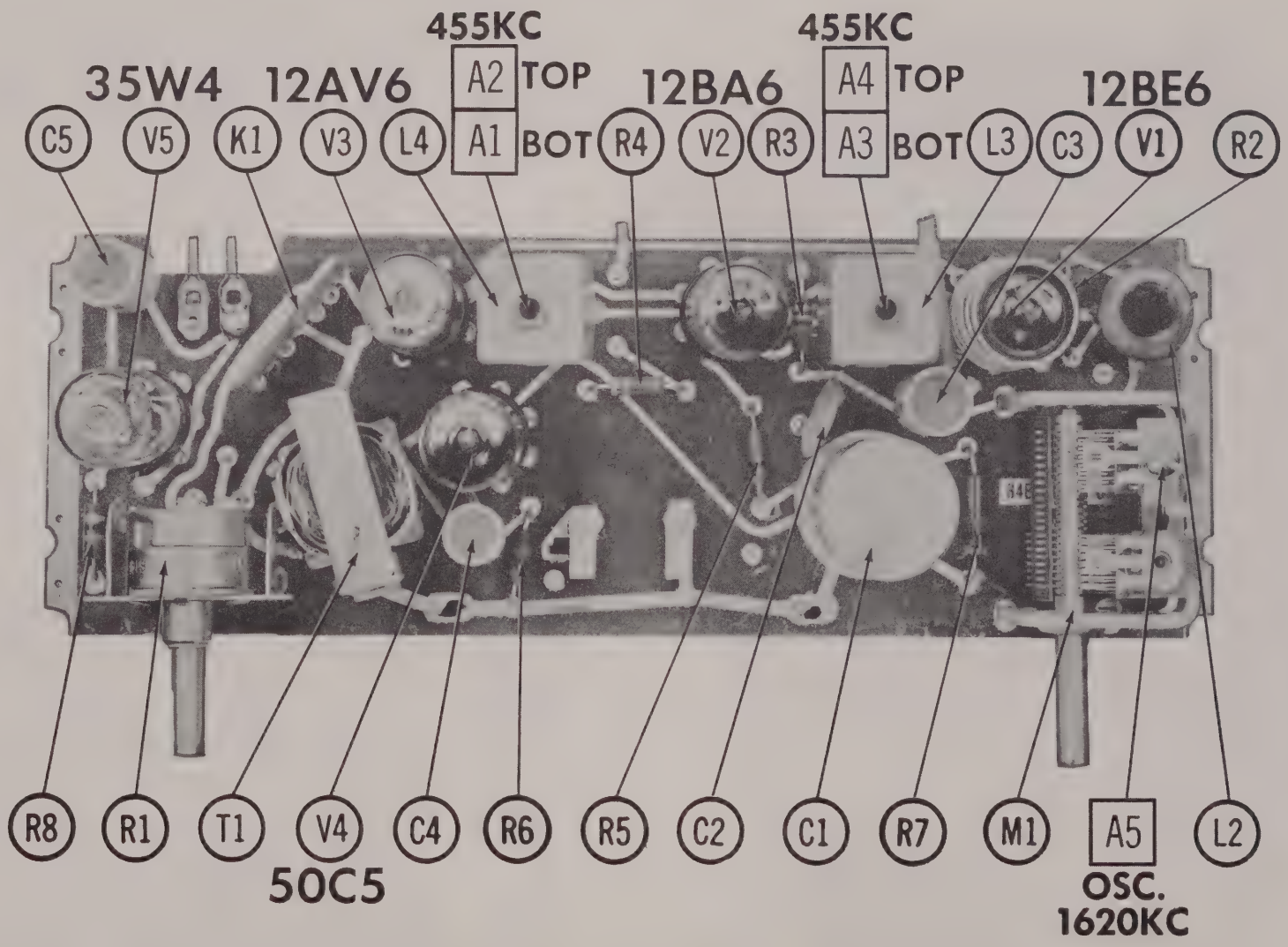


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	23B632015	AFH2-15	BO150	FP213	TMD-12	D-065	TVL-2432
B	▲30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		21R120853	BPD-01	DD-103	BYA6SI	GP-10000	DC5II	5HK-S1	
C3	.05	200	8B120842	BPD-05	DF-503	BC2S47J		ACE615	6SE-S47	
C4	.03	400	8K122983	BPD-03	DF-303	BC6S33J			2SE-S33	
C5	.05	400	8K121268	BPD-05	DF-503	BC6S47J		ACE615	6SE-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	18K635823					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	22K		6R6028	BTS-22K	
R3	27K		6R6434	BTS-27K	
R4	3.3Meg		6R2118	BTS-3.3Meg	
R5	100Ω		6R6018	BTS-100	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R6	150Ω		6R3992	BTS-150	
R7	1000Ω	1	6B119404	BTA-1000	
R8	27Ω		6R5683	BTS-27	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	25B632025		A-3025 ①			S-12X ①	① Use original channel mtg.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	50C635807	4A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	1V636116				Includes cabinet back & line cord.
L2	Osc. Coil	24B631990				
L3	Input IF	24K636016				
L4	Output IF	24K636017				

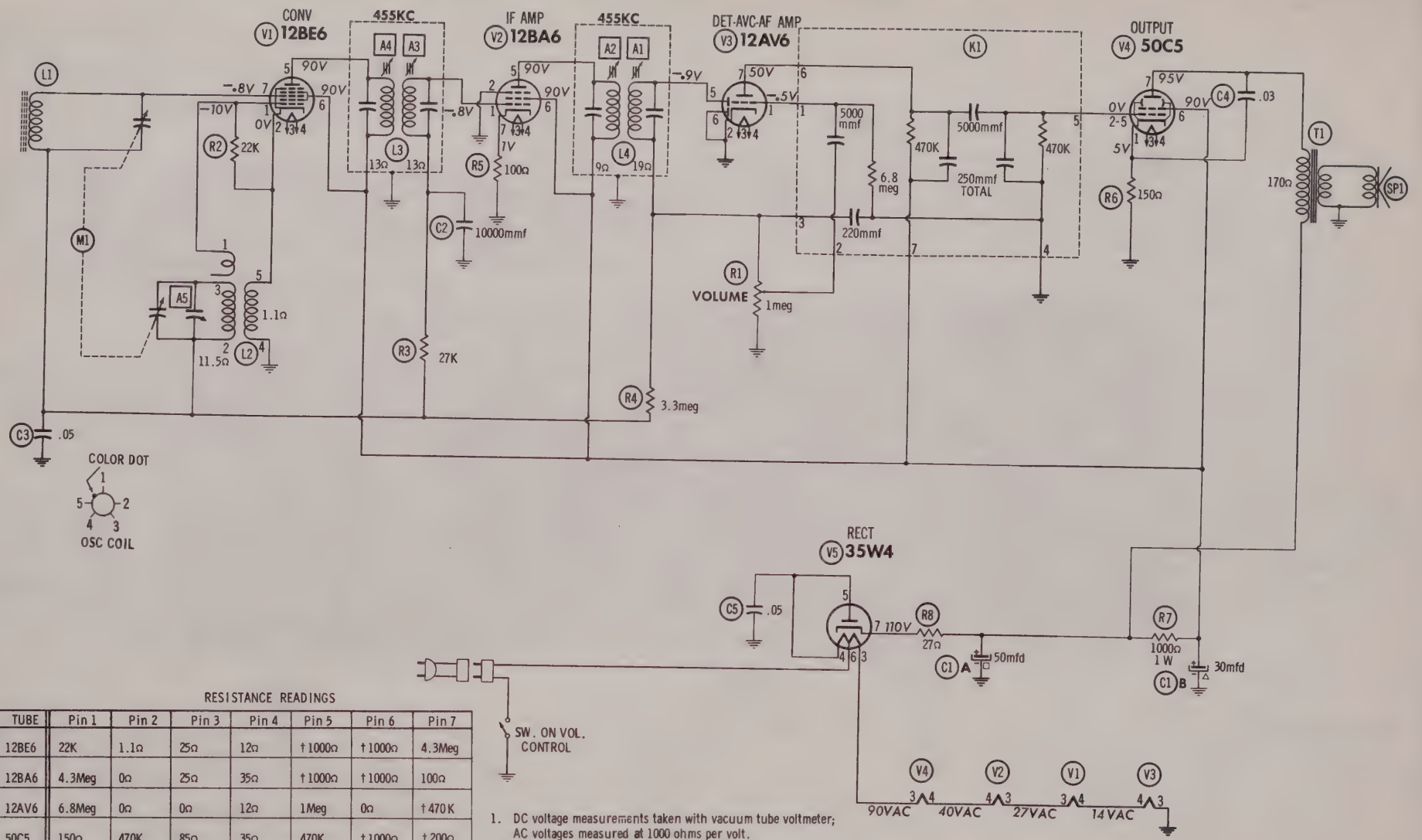
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA	
K1	Det. -Audio Net.	5000MMF, 5000MMF, 250MMF, 250MMF, 470K, 470K, 6.8Meg	51B635833	Aerovox Centralab Sprague	PA-512 PCT-158 DT-5

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Cap.	19B635821	2 Gang
	Cabinet	1V636124	Ebony, Model 57A1.
	Cabinet	1V636125	Red, Model 57A2.
	Cabinet	1V636126	White, Model 57A3.
	Knob	36C635933	Tuning, Black.
	Knob	36K635934	On-Off-Volume, Black.

MOTOROLA MODEL 57A1 (Ch. HS-521)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1.1Ω	25Ω	12Ω	†1000Ω	†1000Ω	4.3Meg
V2	12BA6	4.3Meg	0Ω	25Ω	35Ω	†1000Ω	†1000Ω	100Ω
V3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1Meg	0Ω	†470K
V4	50C5	150Ω	470K	85Ω	35Ω	470K	†1000Ω	†200Ω
V5	35W4	NC	NC	85Ω	120Ω	120Ω	115Ω	20K

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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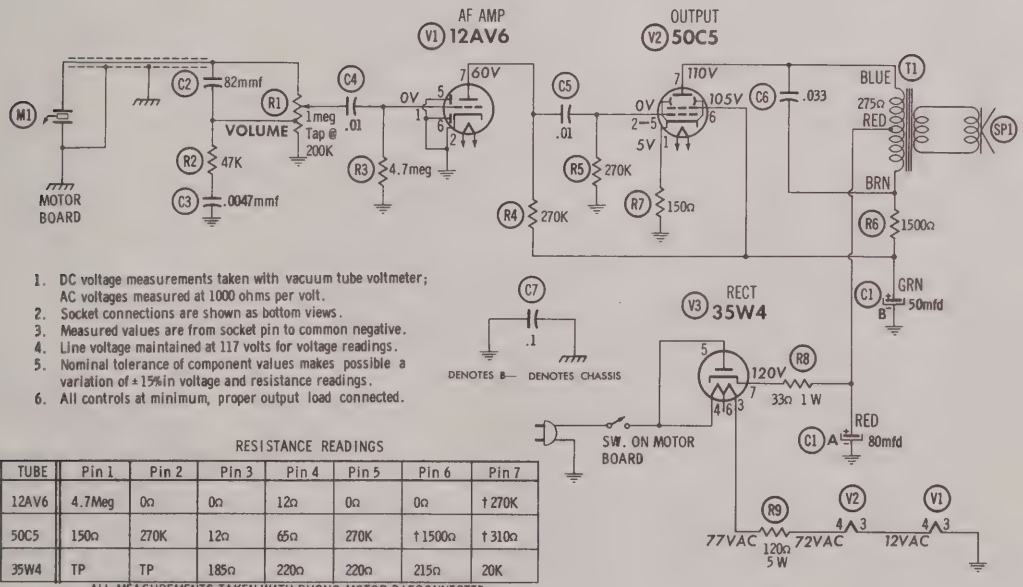
RCA VICTOR MODELS
7-EY-2HH, JJ (Ch. RS-155A)

RCA VICTOR MODELS
7-EY-2HH, JJ (Ch. RS-155A)

TRADE NAME	RCA Victor Models 7-EY-2HH, 7-EY-2JJ (Ch. RS-155A)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N.J.
TYPE SET	AC Operated Phono Amplifier With 45 RPM Automatic Record Changer
TUBES (Three)	Types 12AV6 AF Amplifier, 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .25 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE RCA MODEL RP-190 SERIES — PHOTOFACT SET 144 FOLDER 7 OR RECORD CHANGER MANUAL CM-4.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AV6	4.7Meg	0Ω	0Ω	12Ω	0Ω	0Ω	†270K
V2	50C5	150Ω	270K	12Ω	65Ω	270K	†1500Ω	†310Ω
V3	35W4	TP	TP	185Ω	220Ω	220Ω	215Ω	20K

ALL MEASUREMENTS TAKEN WITH PHONO MOTOR DISCONNECTED.
† MEASURED FROM PIN 7 OF V3.
TP TIE POINT.

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355-8

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AV6	
V2	Output	50C5	
V3	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	75980	PRS150V8040	BBRD8415	TCD498	TDLD-12	FMT-1540	R1279*
B	50	150							

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	82	500	101604	SI82	D6-820	5W5Q82	GP1K-820		1FM-482	
C3	.0047	400	73920	SI4700	D6-472	CUB6D47	GP3-333-472	PT6247	6TM-D47	
C4	.01	200	79316	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C5	.01	200	79316	BPD-01	D6-103	CUB4S1	GP3-333-103	PT411	4TM-S1	
C6	.033	400	73552	BPD-03	DF-303	CUB6S33		PT6133	6TM-S33	
C7	.1	400	73551	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	76201	BT-72	A47F1-1Meg	Q13-137X	UT-440	Volume, Tap at 200K
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	IRC PART No.	NOTES
R2	47K		502347	BTS-47K	
R3	4.7Meg		30931	BTS-4.7Meg	
R4	270K		502427	BTS-270K	
R5	270K		502427	BTS-270K	
R6	1500Ω		502215	BTS-1500	
R7	150Ω		502115	BTS-150	
R8	33Ω	1	512033	BTA-33	
R9	120Ω	5	72314	1 3/4A-125	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2800Ω	3-4Ω	75939	Z1102 ①	A-3031 ①	A-3336 ①	24S50A ①	S-16X ①	① Drill new mtg. hole.

SPEAKER

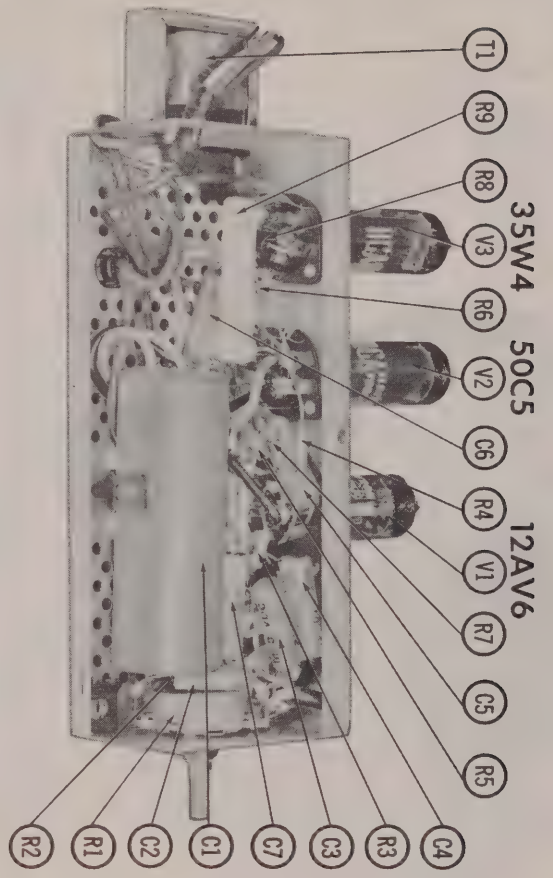
ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	RCA Victor PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	3-4Ω	101599	46A07	

PHONO CARTRIDGE

ITEM No.	RCA Victor PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	74067	408	N-10-1J	51-1	PFT-1	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW



PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	RCA Victor PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2	74068	* M-71LP or † M-70LP or ♦ M-70LPD	† W-42MGS or ♦ W-42MGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
	Cabinet	Y2878	Model 7-EY-2JJ
	Cabinet	Y2879	Model 7-EY-2HH
	Knob	101600	Volume, Model 7-EY-2JJ
	Knob	101601	Volume, Model 7-EY-2HH
	Knob	75741	Control-Record Changer

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

SETCHELL-CARLSON MODELS 71, 711 (Ch. C201)

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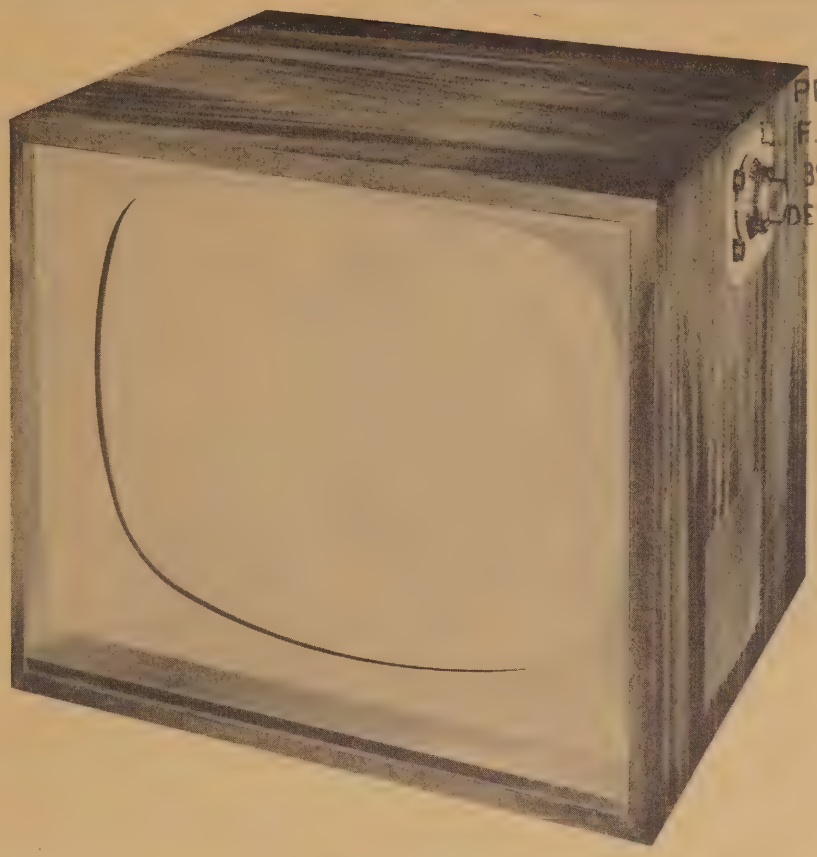

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DENVER, COLORADO

SETCHELL-CARLSON
MODELS 71, 711 (Ch. C201)

SETCHELL-CARLSON MODEL 71 (Ch. C201)

TRADE NAME	Setchell-Carlson Models 71, 711 (Ch. C201)
MANUFACTURER	Setchell-Carlson, Inc., New Brighton, Minn.
TYPE SET	Combination AM Radio & Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 150 Watts: 1.37 Amp. @ 117 Volts AC
TUNING RANGE	TV Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)
	RADIO AM 540-1650KC, IF 455KC

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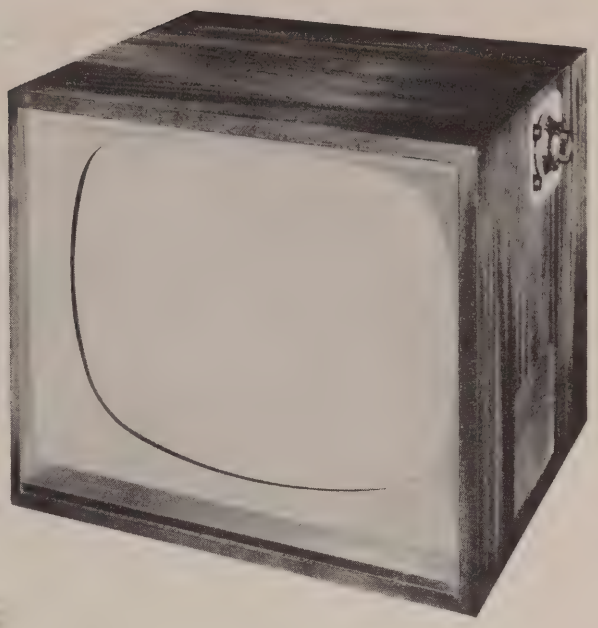
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type control knobs from the side.
2. Remove 10 wood screws and the rear cover.
3. Remove 2 wood screws and antenna terminal board.
4. Remove picture tube socket, Ion trap, HV lead and speaker plug.
5. Remove 4 chassis bolts.
6. Remove chassis.
7. Remove 2 speaker nuts.
8. Remove speaker with audio output transformer mounted.



PROPER
L. F. BLANKENSH
3924 MEADE S.
DENVER, COLORADO

MODEL	CHASSIS
71	C201

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 3 wood screws holding the name plate along the bottom of the safety glass. Using extreme caution, remove the safety glass.

SPECIAL ADJUSTMENTS

Focus

Adjust the Ion trap for the best focus consistent with maximum brightness.

Width

The width may be varied by means of a brass sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust the horizontal hold until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (A12) located on top of chassis.

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

SETCHELL-CARLSON
MODELS 71, 711 (Ch. C201)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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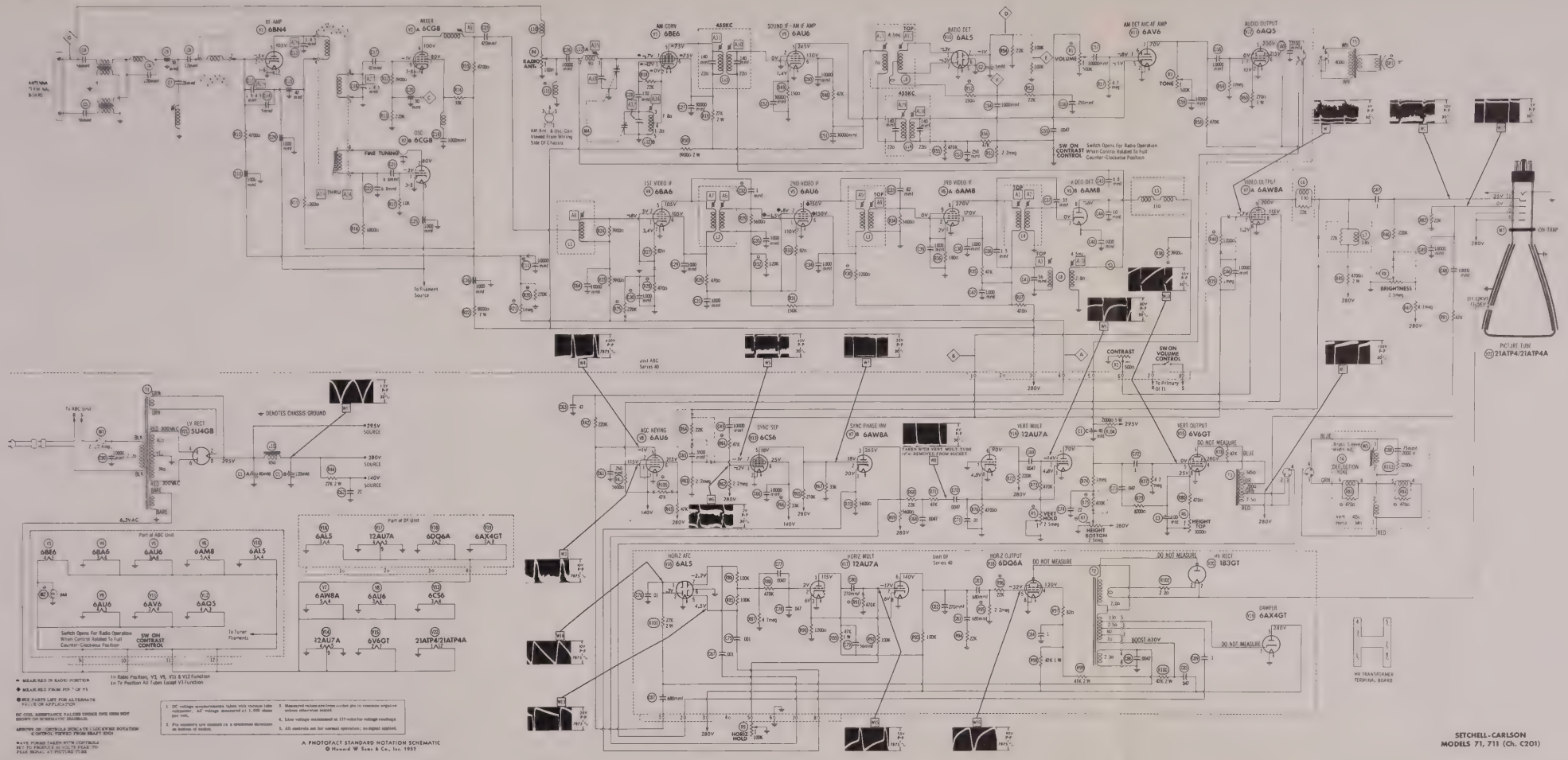
SETCHELL-CARLSON
MODELS 71, 711 (Ch. C201)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MODELS 71, 711 (Ch. C201)

TUBE PLACEMENT CHART

TUBE FAILURE CHECK CHART

TUBE FAILURE CHECK CHART

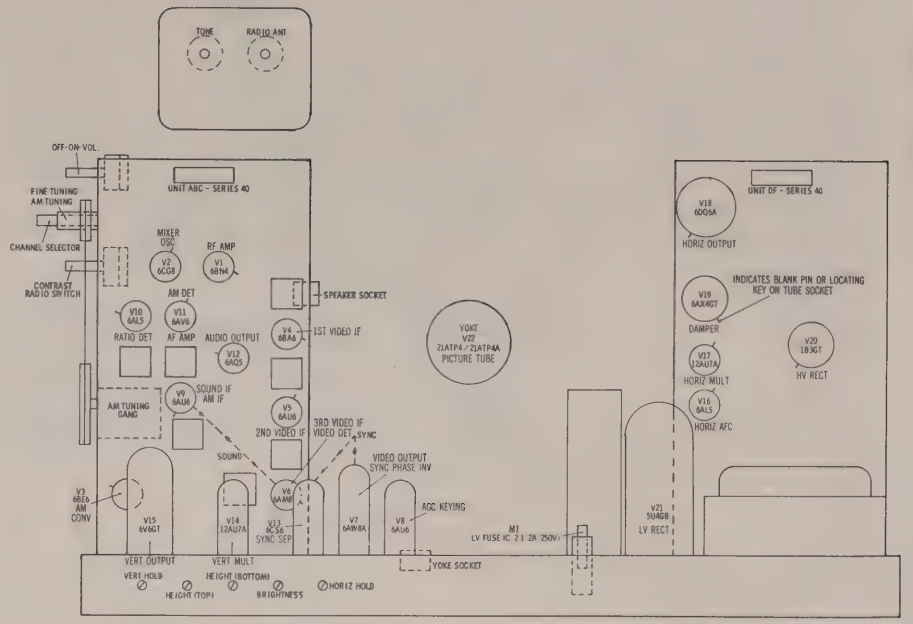
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - Fuse (M1), V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, V8
No pic, no sound, has snow - V1, V2, V4
No pic, has sound, has raster - V7, V22
Has pic, no sound - V9, V10, V11, V12
Overloaded picture - V8

SYNC FAILURE
No vert. sync - V13, V7
No horiz. sync - V13, V7, V16
No vert. or horiz. sync - V13, V7

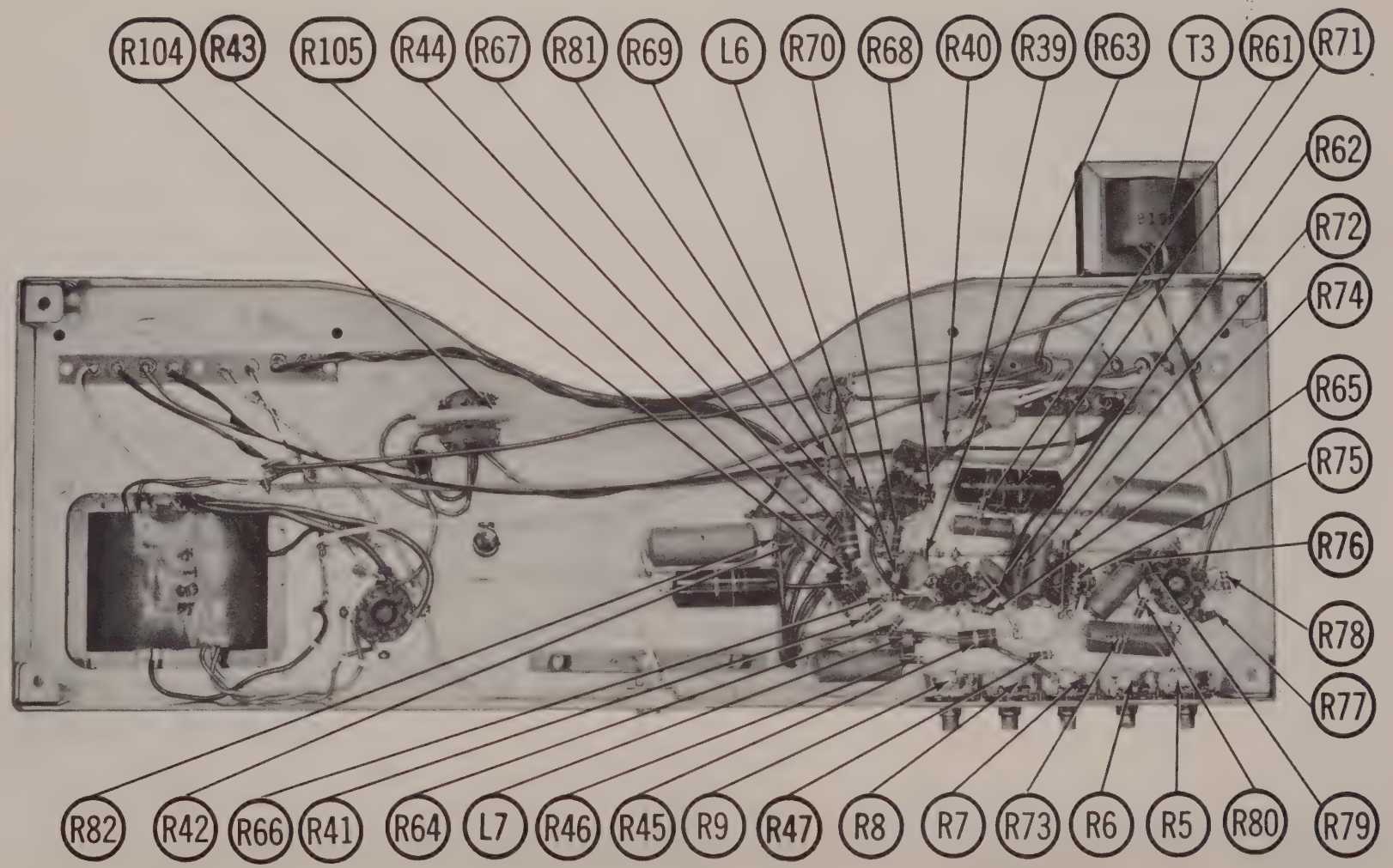
SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V20, V22
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V21
Vert. off freq. - V14
Horiz. off freq. - V16, V17



SET 355 FOLDER 9

PAGE 3

SETCHELL-CARLSON
MODELS 71, 711 (Ch. C201)



RESISTOR IDENTIFICATION - POWER, SYNC, & VERTICAL CHASSIS

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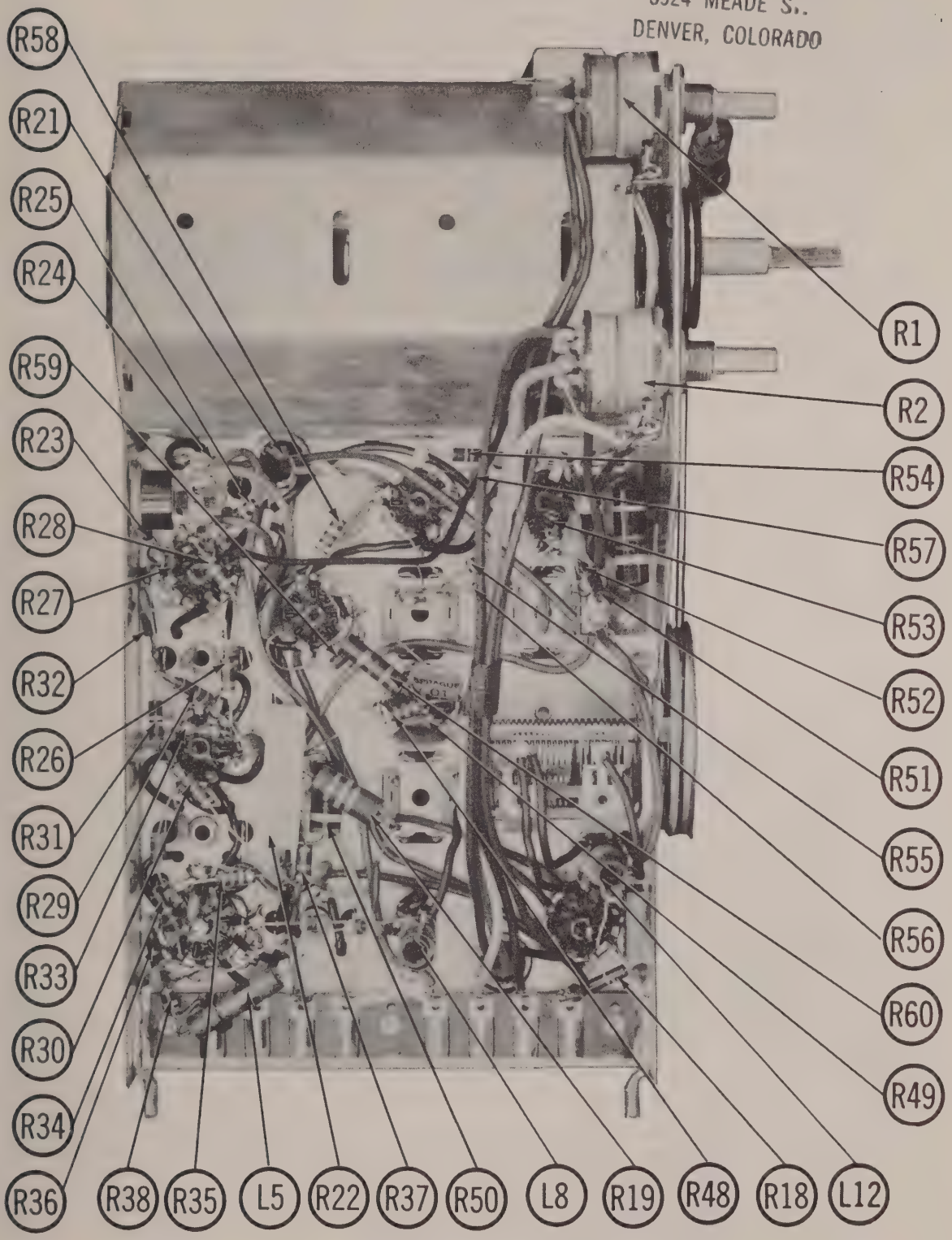

RESISTOR IDENTIFICATION, RF-IF CHASSIS

SET 355 FOLDER 9

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Remove the mixer-oscillator tube for steps 1, 2 and 3. Replace in its socket after step 3.
Connect the negative lead of a 9 volt battery to point Ⓐ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 2 (grid) of 6AM8 (V6). Low side to chassis.	44MC (10MC Swp)	41.25MC 45.75MC	Any	Vert. amp thru 10K to point Ⓑ. Low side to chassis.	A1, A2, A3	Adjust for response curve similar to Fig. 1. Adjust A1 and A2 to place 45.75MC marker at 50% and A3 to place 41.25MC marker in trap notch.
2.	"	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	"	"	"	"	A4, A5	Adjust for maximum gain with marker as in Fig. 1.
3.	"	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A6, A7	"
4.	"	High side to pin 9 (grid) of 6CG8 (V2). Low side to chassis.	"	"	"	"	A8, A9	Adjust for maximum gain with marker as in Fig. 1. Repeat steps 1 thru 4 if necessary to obtain proper response.

SOUND IF ALIGNMENT

Connect two matched 100K (±1%) resistors in series from point Ⓓ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 7 (cathode) of 6AM8 (V6). Low side to chassis.	4.5MC (unmod)	Any	DC probe to point Ⓓ. Common to chassis.	A10, A11	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point Ⓕ. Common to point Ⓔ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

OSCILLATOR ALIGNMENT

Leave bias connected as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp thru 47K to point Ⓑ. Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 2. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A14	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A15	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A16	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A17	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A18	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A19	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A20	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A23	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A24	

RF AND MIXER ALIGNMENT

Leave bias connected as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10K to point Ⓒ. Low side to chassis.	A25, A26, A27	Adjust for response curve similar to Fig. 3 with markers above 90%.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 3. If markers fall below 70% on any channel, make compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

ALIGNMENT INSTRUCTIONS (cont)

RADIO ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
10.	.01MFD	High side to point Ⓖ. Low side to chassis.	455KC (400 % mod)	AM Radio	Tuning gang fully open.	Across voice coil.	A28, A29, A30, A31	Adjust for maximum output.
11.	"	"	1650KC	"	"	"	A32	"
12.	"	"	1400KC	"	Tune for maximum output.	"	A33	"
13.	"	"	600KC	"	"	"	A34, A35	Rock tuning gang while adjusting A34 for maximum output. Adjust A35 for maximum output.

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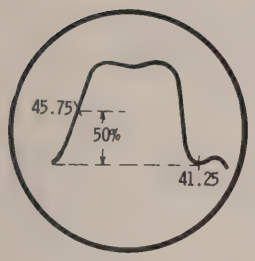


FIG. 1

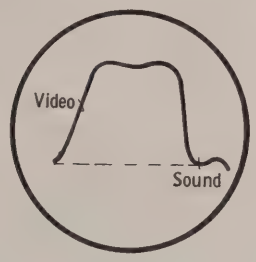


FIG. 2

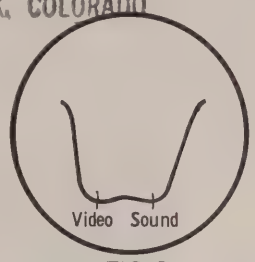
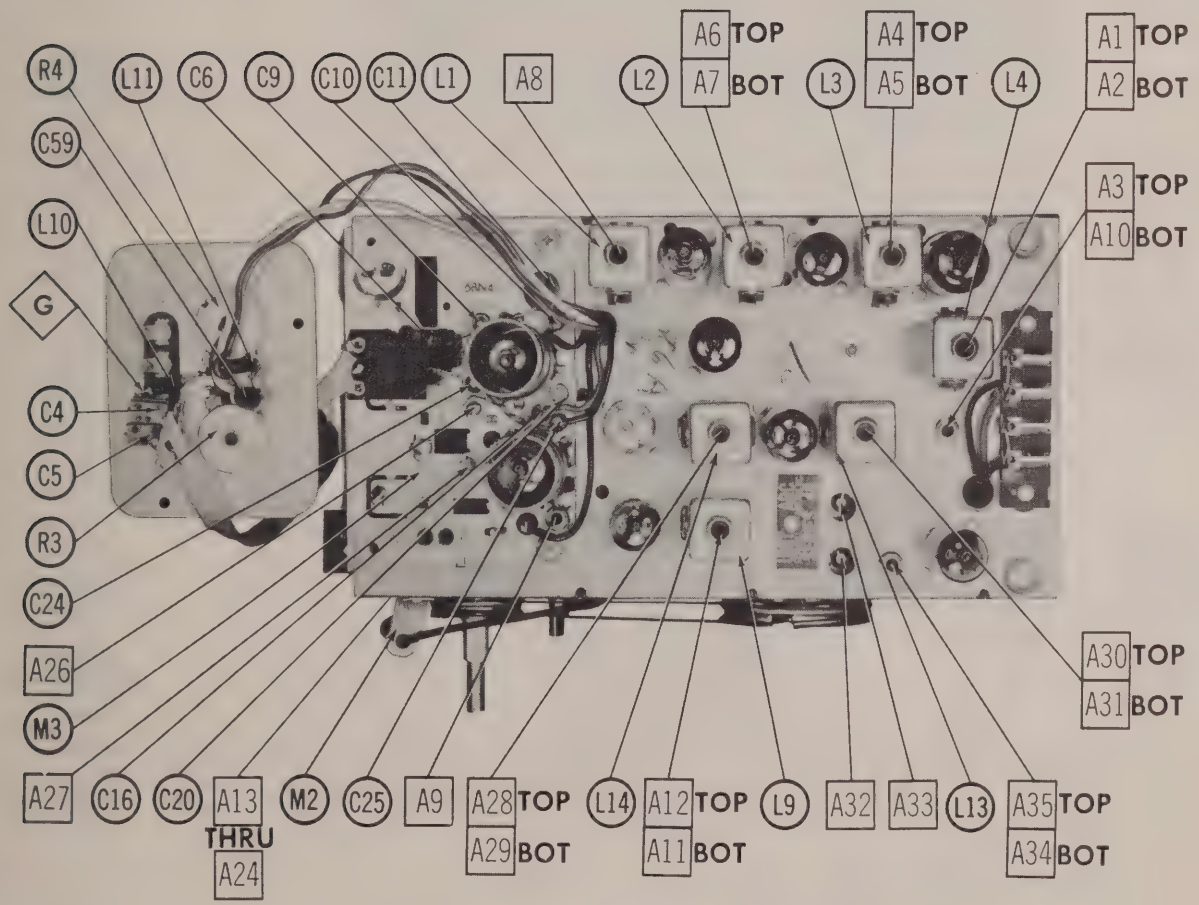
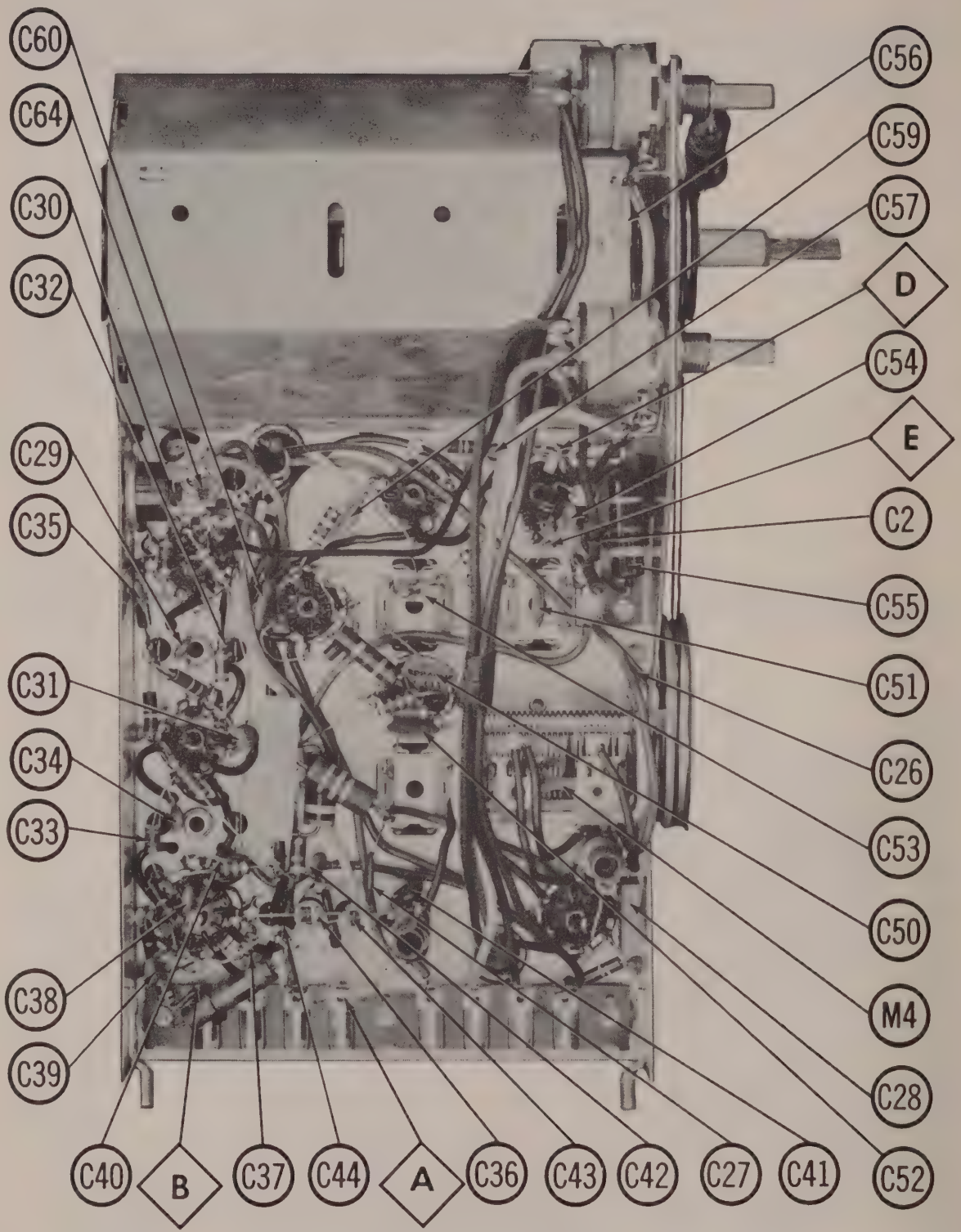


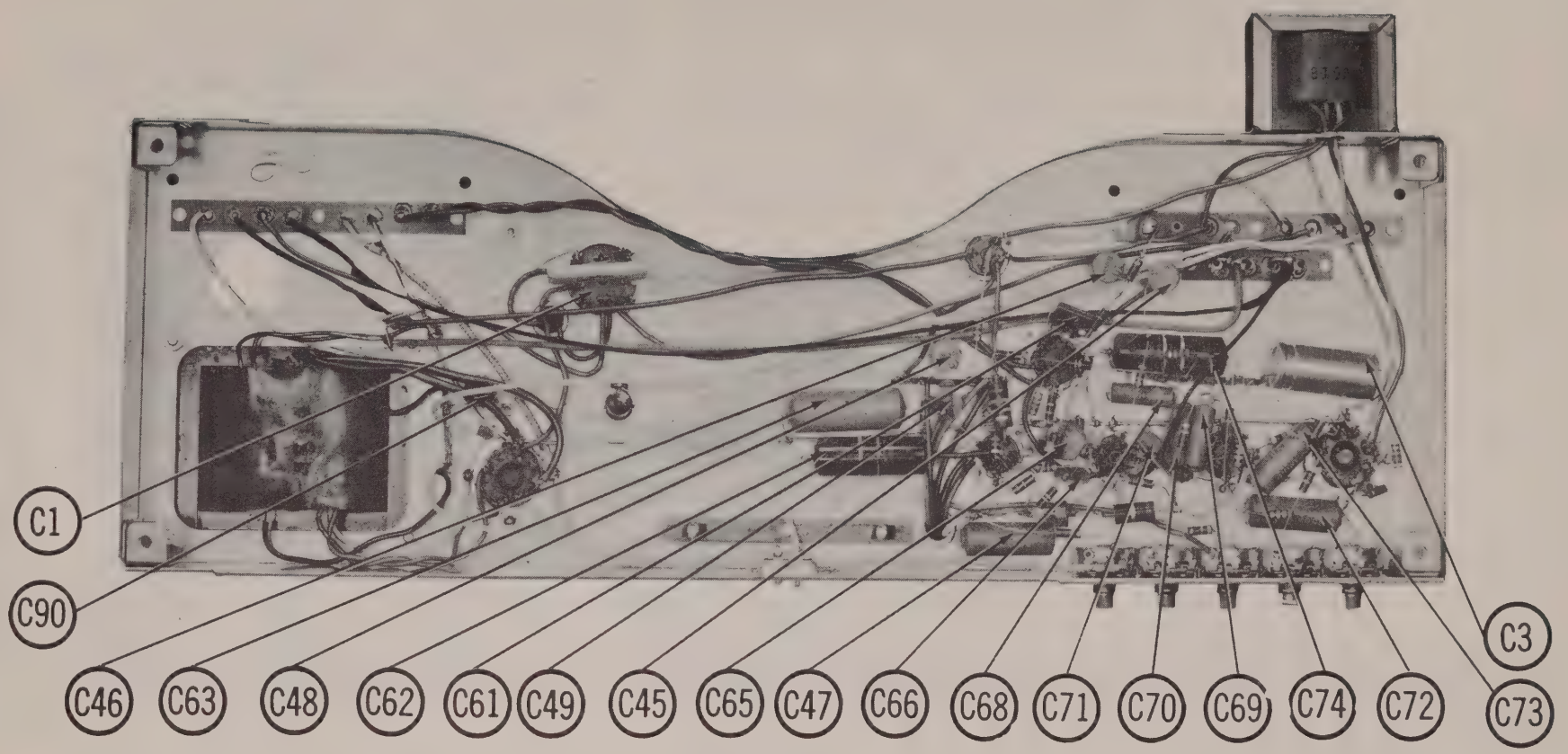
FIG. 3



RF-IF UNIT (ABC) TOP VIEW



CAPACITOR & ALIGNMENT IDENTIFICATION, RF-IF CHASSIS



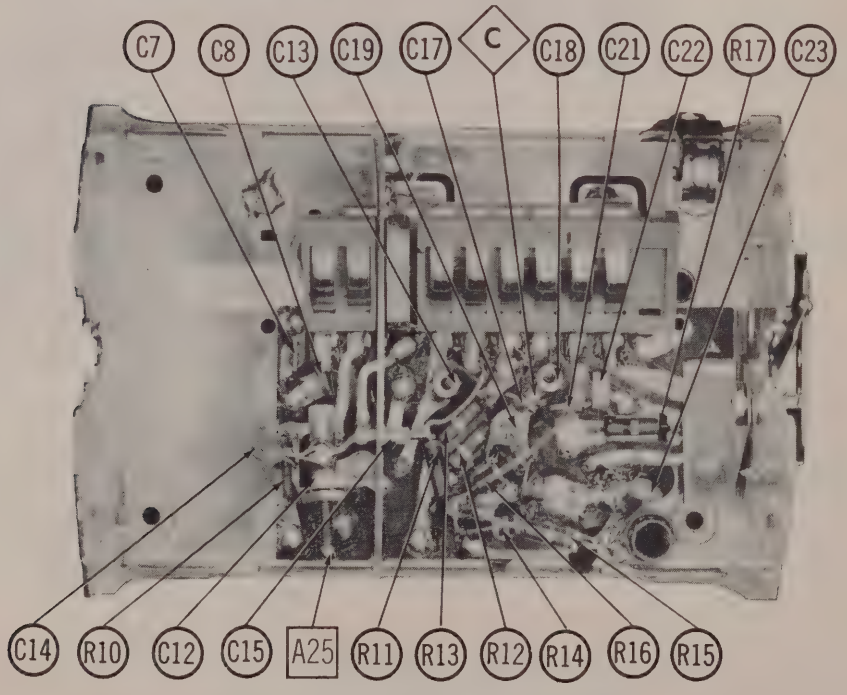
CAPACITOR IDENTIFICATION - POWER, SYNC & VERTICAL CHASSIS

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BN4	0Ω	1.4Meg	0Ω	.1Ω	†9000Ω	0Ω	1.4Meg		
V2	6CG8	10K	†15K	0Ω	0Ω	.1Ω	†13K	†40K	0Ω	220K
V3	6BE6	22K	1Ω	▬ 0Ω	▬ .1Ω	†30K	†30K	▬ 2.2Meg		
V4	6BA6	220K	470Ω	0Ω	.1Ω	▲ 470Ω	▲ 470Ω	550Ω		
V5	6AU6	120K	INF	0Ω	.1Ω	†1700Ω	†1700Ω	▲ 82Ω		
V6	6AM8	180Ω	.1Ω	†47K	.1Ω	0Ω	†530Ω	.1Ω	3900Ω	180Ω
V7	6AW8A	5600Ω	33K	†5600Ω	.1Ω	0Ω	● 8Ω	1Meg	†33K	†4800Ω
V8	6AU6	†33K	†27K	0Ω	.1Ω	440K	†47K	†27K		
V9	6AU6	24Ω	0Ω	.1Ω	0Ω	†3900Ω	†50K	150Ω		
V10	6AL5	500K	500K	0Ω	.1Ω	0Ω	0Ω	22K		
V11	6AV6	4.7Meg	0Ω	0Ω	.1Ω	470K	NC	†470K		
V12	6AQ5	1Meg	270Ω	.1Ω	0Ω	†2400Ω	†2000Ω	1Meg		
V13	6CS6	†2.2Meg	0Ω	0Ω	.1Ω	†270K	†60K	2.2Meg		
V14	12AU7A	●†1.7Meg	●1Meg	4700Ω	0Ω	0Ω	†220K	0Ω	4700Ω	.1Ω
V15	6V6GT	TP	0Ω	†600Ω	†260Ω	4.7Meg	NC	.1Ω	●1000Ω	
V16	6AL5	27K	27K	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V17	12AU7A	†47K	5Meg	1200Ω	0Ω	0Ω	†100K	80K	1200Ω	.1Ω
V18	6DQ6A	TP	.1Ω	TP	†47K	2.2Meg	NC	0Ω	0Ω	TOP CAP ‡13Ω
V19	6AX4GT	TP	NC	200K	NC	†65Ω	TP	0Ω	.1Ω	
V20	1B3GT	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡223Ω
V21	5U4GB	NC	90K	NC	41Ω	NC	39Ω	NC	90K	
V22	21ATP4	0Ω	22K	Pin 6 †65Ω	Pin 10 †65Ω	Pin 11 ● 240K	Pin 12 .1Ω			

† MEASURED FROM PIN 8 OF V21.
▬ MEASURED IN RADIO POSITION.
● THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
‡ MEASURED FROM PIN 3 OF V19.
▲ MEASURED FROM PIN 2 OF V5.

NC NO CONNECTION
TP TIE POINT



RF TUNER - BOTTOM VIEW

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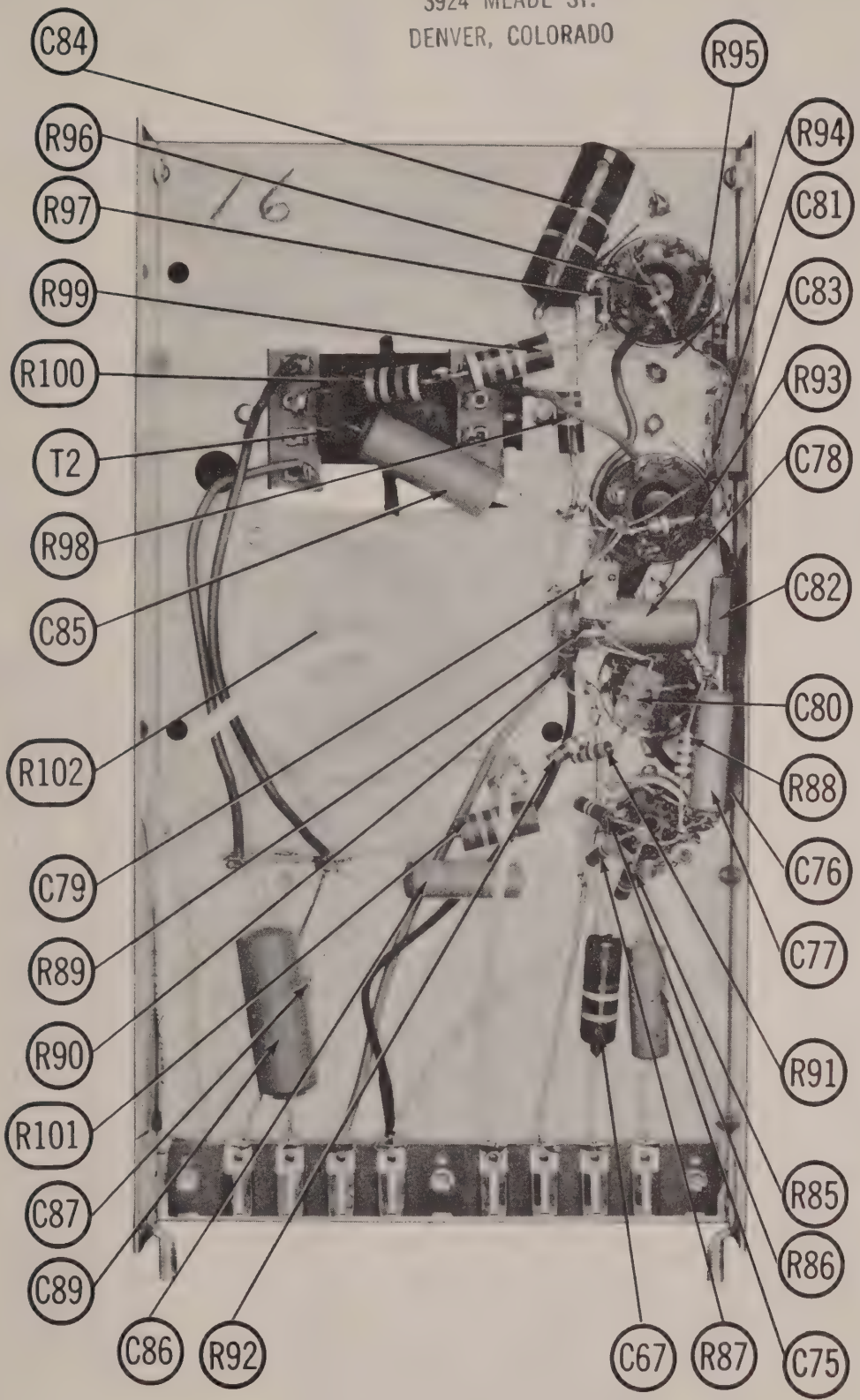


HORIZONTAL SWEEP CHASSIS - BOTTOM VIEW

SET 355 FOLDER 9

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	6BH4	
V2	Mixer-Osc.	6CG8	
V3	AM Converter	6BE6	
V4	1st Video IF Amp.	6BA6	
V5	2nd Video IF Amp.	6AL6	
V6	3rd Video IF Amp. - Video Det.	6AM8	
V7	Video Output - Sync. Phase Inverter	6AW8A	
V8	AGC Keying	6AL6	
V9	Sound IF Amp - AM IF Amp.	6AL6	
V10	Ratio Det.	6AL5	

ITEM No	USE	TYPE	NOTES
V11	AM Det-AVC-AF Amp.	6AV8	
V12	Audio Output	6AQ5	
V13	Sync Sep.	6C86	
V14	Vert. Mult.	12AL7A	
V15	Vert. Output	6V6GT	
V16	Horiz. AFC	6AL5	
V17	Horiz. Mult.	12AU7A	
V18	Horiz. Output	6DQ6A	
V19	Damper	EA86GT	
V20	HV Rectifier	1B3GT	
V21	LV Rectifier	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: Sarkes-Tarzian PART No.	General Electric PART No.	Sylvania PART No.	NOTES
V22	21ATP4	21ATP4 ①	21ATP4A 21ATP4	② Aluminized ③ Silver Screen 85

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	Sarkes-Tarzian PART No	AEROVOX PART No	CORNELL DUBILIER PART No	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	◆ 40	350	C-101	AFB3-24 ⑤	BK338	FT375 ⑤	TMD-01 ⑤	SS-220	R3340T
B	◆ 130	350			BK435	TC68	TD 40-350	MTD-4540	
C	60	350							
C2	5	150		PR815V4	BBR4-150	TC40	TD-4-150	MMT-1505	TVA-1403
C3	100	50		PR850Y100	BR1005	TC3501	TD-100-50	MTH-5010	TVA-1310

† Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors

ITEM No	RATING: CAP	VOLT	Sarkes-Tarzian PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C4	56			1468-00056		5W5-56			MS-456	
C5	56			1468-00056		5W5-56			MS-456	
C6	120			BPD-00012	DD-I31	L10T13	ED-130	UC-5313	5GA-T13	
C7	28									
C8	13									
C9	30									
C10	1000			EF-001	MFT-1000				503C-D1	
C11	10000			BPD-01	DD-103	BYA501	GP-10000	DC511	5HK-B1	Note 1
C12	1.5-4.5				539-8		532-B			
C13	1-4.0				539-8		532-B			
C14	5									
C15	47									
C16	1000			EF-001	MFT-1000				503C-D1	
C17	47									
C18	1-4.5				539-8		532-B			
C19	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C20	30									
C21	8.8									
C22	6.8									
C23	470			BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C24	1000			EF-001	MFT-1000				503C-D1	
C25	1000			EF-001	MFT-1000				503C-D1	
C26	10000			BPD-03		BYA5B1	GP-10000	DC511	5HK-B1	
C27	30000			BPD-03		BYA5B3				
C28	100			1468-00001		5WST1		MC335	MS-T1	
C29	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C30	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	Note 1
C31	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C32				NPO-S1	TCZ-1	C10V1C	TCO-1		5TCCB-V1	Note 2
C33	82									
C34	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C35	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C36	1.5			NPO-S1 1.5	TCZ-1R5	C10V15C	TCO-1.5		5TCCB-V1R	
C37	33									
C38	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C39	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C40	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C41	56			NPO-S1 56	TCZ-56	L10G56	ED-56		5GA-S56	
C42	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C43	6.8			NPO-S1 6.8	TCZ-6.8	C10V68C	TCO-6.8		5TCCB-V6	
C44	10			BPD-00001	DD-10	L10T1	ED-10	UC-541	5GA-G1	
C45	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C46	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C47	1	400		P488M-1	DF-104	CUA4P1		GEM-4041	4TM-P1	
C48	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C49	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	Note 1
C50	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C51	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C52	30000			BPD-03		BYA5B3				
C53	2700			1468-00025		5WST35			MS-335	
C54	1000			BPD-001	DD-103	BYA5D1	ED-1000	DC531	5HK-D1	
C55	0.047	400		BPD-0047	D6-472	CUA4D47		GEM-4047	4TM-D47	
C56	250			1468-00025		5WST25			MS-325	
C57	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C58	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C59	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C60	0.0027			BPD-0027	D6-272	BYA10D27	GP-2700	DC531	5GA-D27	
C61	250			1468-00025		5WST25			MS-325	
C62	22	400		P488N-22		CUA4P22		GEM-4022	4TM-P22	
C63	47	200		P268N-47		CUB2P47		GEM-4047	2TM-P47	
C64	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC511	5HK-D1	
C65	0.035			BPD-035	D6-353	BYA10D35	GP-3500	DC531	5GA-D35	
C66	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	
C67	001	400		BPD-001	DD-102	CUB4D1		GEM-4021	4TM-D1	
C68	0.047	400		BPD-0047	D6-472	CUB4D47		GEM-4247	4TM-D47	
C69	0.047	400		BPD-0047	D6-472	CUB4D47		GEM-4247	4TM-D47	
C70	0.047	400		BPD-0047	D6-472	CUB4D47		GEM-4247	4TM-D47	
C71	01	400		BPD-01	DD-103	CUB4B1		GEM-411	4TM-B1	
C72	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C73	047	400		BPD-35	DF-503	CUB4S47		GEM-4147	4TM-S47	
C74	22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C75	001	400		BPD-301	DD-102	CUB4D1		GEM-421	4TM-D1	
C76	01	400		BPD-01	DD-103	CUB4B1		GEM-411	4TM-B1	
C77	0047	400		BPD-0047	D6-473	CUB4D47		GEM-4247	4TM-D47	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING: CAP	VOLT	Sarkes-Tarzian PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C78	.047	600		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C79	56			1468-00056		5W5-56			MS-456	
C80	270			1468-00027		5W3-27			MS-327	
C81	680			1467-00068		5W5-68			MS-368	
C82	270			1468-00027		5WST27			MS-327	Note 3
C83	680			1467-00068		5WS-68			MS-368	
C84	.1	400		P488M-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C85	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C86	.0047	400		BPD-0047	D6-472	CUB4D47		GEM-4247	4TM-D47	
C87	680			1467-00068		5W5-68			MS-368	
C89	75	2000				HVA20Q75			20GA-Q75	
C89	1	400		P488M-1	DF-104	CUB4P1		GEM 401	4TM-P1	
C90	10000			BPD-01	DD-103	BYA5B1	GP-10000	DC511	5HK-B1	

Note 1: Not used in some versions.
Note 2: Some versions use a .82MMF capacitor in this application.
Note 3: Some versions may use a .0027MFD in this application.

CONTROLS

ITEM No	RATING: RESIST ance	WATTS	Sarkes-Tarzian PART No	CENTRALAB PART No	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	V-506	B-50	A47-500K-Z	Q13-133	U68	Volume - Note 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			EB-1	898-18	T6-1	U8-58	
R3A	500Ω	½	V-508	AB-6S		Q13-133	U-S28	Contrast
B	Shaft			Not Req.		Not Req.	Not Req.	
C	Switch			EB-3			Not Req.	
R3A	500K	½	V-504	AB-6D	A47-500K-Z	Q13-153	U48	Tone
B	Shaft			AE-1	FES-1/4	Not Req.	Not Req.	
R4A	100Ω	½	V-510	AB-3			U-1	Radio Ant.
B	Shaft			AE-1			Not Req.	
R5A	2.5Meg	½	V-503	EK-3S	A47-2.5Meg-S	Q11-239	SU-565	Vert. Hold - Note 2
B	Shaft			Not Req	FS3-1/4	SQ	Not Req.	
R6A	3000Ω	½	V-501	AB-8	A47-3000-S	Q11-112	SU-8	Height Top
B	Shaft			AK-1	FS3-1/4	SQ	Not Req.	
R7A	2.5Meg	½	V-503	AB-3S	A47-2.5Meg-S	Q11-239	SL-565	Height BTM. - Note 2
B	Shaft			Not Req.	FS3-1/4	SQ	Not Req.	
R8A	2.5Meg	½	B-503	EK-3S	A47-2.5Meg-S	Q11-339	SU-565	Brightness - Note 3
B	Shaft			Not Req.	FS3-1/4	SQ	Not Req.	
R9A	100K	½	V-509	EK-40	A47-100K-S	Q11-131	SU-41	Horiz. Hold
B	Shaft			Not Req.	FS3-1/4	SQ	Not Req.	

Note 1: Alternate part #V-506, 2Meg used in some versions.
Note 2: Some versions may use 2Meg in this application (Same part no.)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	Sarkes-Tarzian PART No	IRC PART No	NOTES
R10	4700Ω			BTS-4700	
R11	1000Ω			BTS-1000	
R12	3900Ω			BTS-3900	
R13	330K			BTS-330K	Note 4
R14	33K			BTS-33K	
R15	4700Ω			BTS-4700	
R16	8800Ω			BTS-8800	
R17	10K			BTS-10K	
R18	22K			BTS-22K	Note 6
R19	27K	2		BTB-27K	
R20	330K			BTS-330K	Note 1
R21	1Meg			BTS-1Meg	Note 2
R22	8900Ω	7		1 3/4A-8000	
R23	3900Ω				
R24	3900Ω				
R25	330K			Note 1	
R26	470Ω			BTS-470	
R27	33Ω			BTS-33	Note 1
R28	470Ω			BTS-470	
R29	5600Ω				
R30	1000Ω			BTS-1200	Note 3
R31	150K			BTS-150K	
R32	120K			BTS-120K	Note 4
R33	33Ω			BTS-33	
R34	5600Ω			BTS-5600	
R35	47K			BTS-47K	Note 7
R36	180Ω			BTS-180	Note 7
R37	470Ω			BTS-470	
R38	3900Ω			BTS-3900	
R39	1Meg				
R40	1200Ω			BTB-1200	Note 1
R41	5600Ω				
R42	2300Ω				
R43	47K				Note 1
R44	27K	2			
R45	4700Ω	2		BTS-4700	
R46	220K			BTS-220K	
R47	4.7Meg			BTB-4.7Meg	Note 8
R48	47K			BTS-47K	Note 8
R49	150Ω			BTS-150	
R50	3900Ω	2		BTS-3900	
R51	2.2Meg			BTS-2.2Meg	
R52	150Ω			BTS-150	Note 5
R53	22K			BTS-22K	
R54	22K			BTS-22K	
R55	470K			BTS-470K	
R56	47K			BTS-47K	
R57	4.7Meg			BTB-4.7Meg	

ITEM No.	RATING: OHMS	WATT	Sarkes-Tarzian PART No	IRC PART No	NOTES
R58	470K			BTS-470K	
R59	1Meg			BTS-1Meg	
R60	270Ω	1		BTA-270	
R61	47K			BTS-47K	Note 4
R62	2.2Meg			BTS-2.2Meg	
R63	2.2Meg			BTS-2.2Meg	
R64	22K			BTS-22K	
R65	270K			BTS-270K	
R66	33K			BTS-33K	
R67	33K			BTS-33K	
R68	22K			BTS-22K	
R69	5600Ω			BTS-5600	
R70	5600Ω			BTS-5600	
R71	47K			BTS-47K	
R72	220K			BTS-220K	
R73	470K			BTS-470K	
R74	1Meg			BTS-1Meg	
R75	470K			BTS-470K	
R76	4700Ω			BTS-4700	
R77	4.7Meg			BTS-4.7Meg	
R78	47K			BTS-47K	
R79	8200Ω			BTS-8200	
R80	470Ω			BTS-470	
R81	47K			BTS-47K	
R82	33K			BTS-33K	
R83	470Ω				
R84	470Ω				
R85	100K				
R86	100K				
R87	4.7Meg				
R88	470K				
R89	47K	1			
R90	1200Ω				
R91	470K				
R92	100K				
R93	100K				
R94	33K				
R95	2.2Meg				
R96	33K				
R97	82Ω			BTS-83	
R98	47K	1		BTA-47K	
R99	47K	3		BTS-47K	
R100	47K	2		BTB-47K	
R101	47K	3			
R102	2.2Ω			WW½-2.2	
R103	2200Ω				
R104	2200Ω	5		PWT-2200	
R105	47K				Note 1

Note 1: Not used in some versions.
Note 2: A 220K resistor used in some versions.
Note 3: A 2200Ω resistor used in some versions.
Note 4: A 100K resistor used in some versions.
Note 5: A 180Ω resistor used in some versions.
Note 6: A 47K resistor used in some versions.
Note 7: A 56Ω resistor used in some versions.
Note 8: A 1Meg resistor used in some versions.
Note 9: A 820Ω resistor used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	Sarkes-Tarzian PART No	Hallodrson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117VAC @1.57A	555VCT @ 190A	5V @ 3A	6.3V @ 9A	T-100					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	Sarkes-Tarzian PART No	Hallodrson PART No	Merit PART No	RCA TYPE No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	T-124	① HO40-54 ①	HV0-54 ①	X12P41 ①	A-83554 ①	F1.V.78 ①	D-49 ①
T3	Vert. Output Trans.	T-101	21V00 ②	A-3035 ②	V30B ②	A 8144 ②	S20R73 ②	
T4A	Yoke(90°) Horiz(23MM)	Y-100 ③	DF60 ③	MDF-92 ③	J25D01 ③	Y90T19.43 ③	DY-18A ③	Y-16 ③	Y-41 & YCI
B	Vert(16MM)	Y-102 ③	③	③	③	③	③	③	③

① Drill new mounting holes.
② Connect term #2 to term #3. Connect term #4 to term #5, then connect term #1 to plate; terms #2 and #3 to screen; terms #4 and #5 to B+ (yoke socket pin #2); term #10 to yoke socket pin #3.
③ Connect as auto transformer red to yellow, then connect red lead and yellow lead to screen and to yoke socket pin #3, green to B+ (yoke socket pin #2).
④ Connect blue to plate; red to screen and to yoke socket pin #3; green to B+ (yoke socket pin #2).
⑤ Does not includes yoke rear cover, resistors R55, R84, R103 or capacitor C88.
⑥ Yoke rear cover and centering device.
⑦ use original rear cover and centering device.
⑧ Connect horiz. network across yoke terms #3 and #7. Use original, if necessary.
⑨ Cut and form a piece of .020 gauge fish paper inside yoke itself and support with an acetate cement, to provide insulation between the with sleeve and the yoke proper.
⑩ Jumper yoke terminals #1 and #4.
⑪ This part may be superseded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Hallodrson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
Horiz. Out. Tube Plate	5	5	5	5	5	5
5	4	4	4	4	4	6
1	4	4	4	4	4	7
4	2	7	7	7	7	3
8	1	6	8	8	8	4
Special Notes →	⑪	⑪	⑪	⑪	⑪	⑪

⑪ Reverse AFC winding if picture is out of phase.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	SEC	Sarkes-Tarzian PART No	Hallodrson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No	NOTES
T5	5500Ω	3-4Ω	T-102	Z1000	A-2930	A-3877	24S51	S-8X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C IMP	Sarkes-Tarzian PART No.	QUAM PART No.	NOTES
SP1	6 10"	PM PM	2-4Ω 3-4Ω	W-108 ① W-127 ②	6A1	① Used in model 71. ② Used in model 71L.

COILS (RF-IF)

ITEM No.	USE	Sarkes-Tarzian PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No	NOTES
L1	1st Video IF	T-130				Tapped
L2	2nd Video IF	T-131				
L3	3rd Video IF	T-132				
L4	4th Video IF	T-133				
L5	Series Peaking Coil		10-3350			256 Microhenries
L6	Series Peaking Coil				6136	436 Microhenries; Wound on 33K resistor.
L7	Shunt Peaking Coil		10-4400*			275 Microhenries; Wound on 47K resistor.
L8A	41.25MC Trap	T-117				
B	1st Sound IF					
L9	Ratio Det.	T-104			6205	Tertiary winding = .7Ω
L10	RF Choke					2 Microhenries
L11	RF Choke					2 Microhenries - Note 1
L12A	AM Ant. Coil	T-118				
B	AM Osc. Coil					Tapped @ L.8Ω
L13	1st AM IF	T-115			18-C1	
L14	2nd AM IF	T-115			18-C2	

* Parallel with 22K resistor.
Note 1: Not used in some versions.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT (100 ~ %)	Sarkes-Tarzian PART No	REPLACEMENT DATA: Hallodrson PART No	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
L15	.190A	65Ω	L 96H	L-100	C5048 ①	C-2964 ①	C-2357 ①	28C43	C-21X

① Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

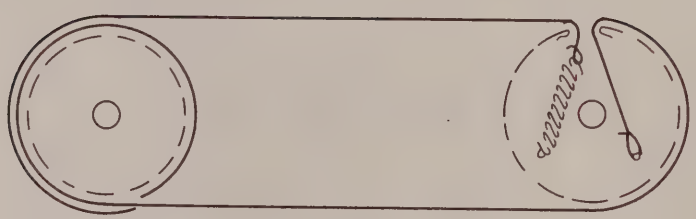
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Setchell-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	C	2½A 250V	F-103	F-102	33202.5 (C-2½A)	346006	C 2½	HC 1 3/4 to 2 1/2

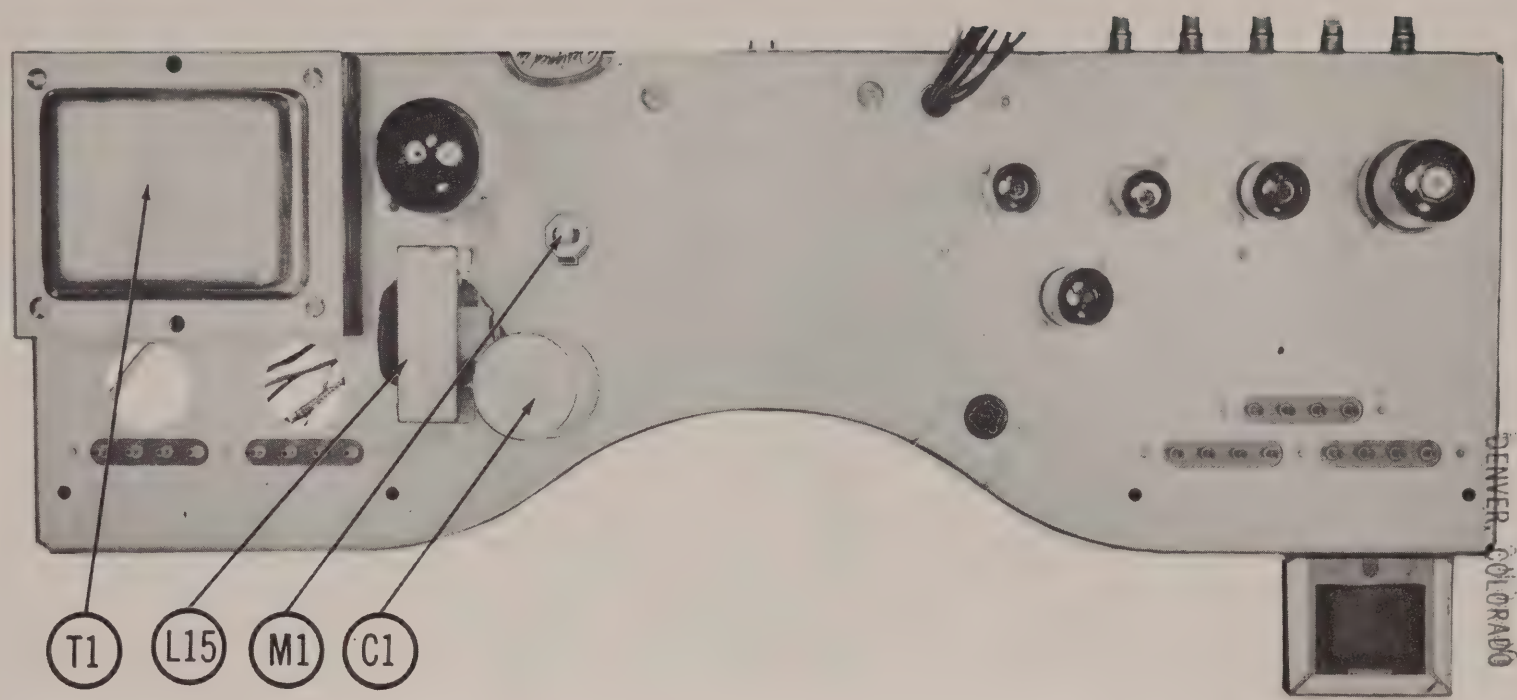
MISCELLANEOUS

ITEM No.	PART NAME	Setchell-Carlson PART No.	NOTES
M2	Pilot Light		#44, Some versions may use a #47 type.
M3	Tuner		VHF, Standard Coil Tuner Part #N-4037.
M4	Tuning Cap.	C-117	Two Gang (27-335MMF, 11-103MMF)
M5	Width Sleeve	Y-103	
M6	Centering Device	Y-102	Part of Yoke Rear Cover.
M7	Ion Trap		
	Safety Glass	G-107	
	Mask	G-108	
	Bezel	H-115	Recessed Knob.
	Knob	K-115	Channel Selector.
	Knob	K-116	Fine Tuning, Radio Dial.
	Knob	K-117	TV On-Off Volume, Radio On-Off, Contrast.

TUNING GANG FULLY CLOSED



RADIO DIAL CORD STRINGING



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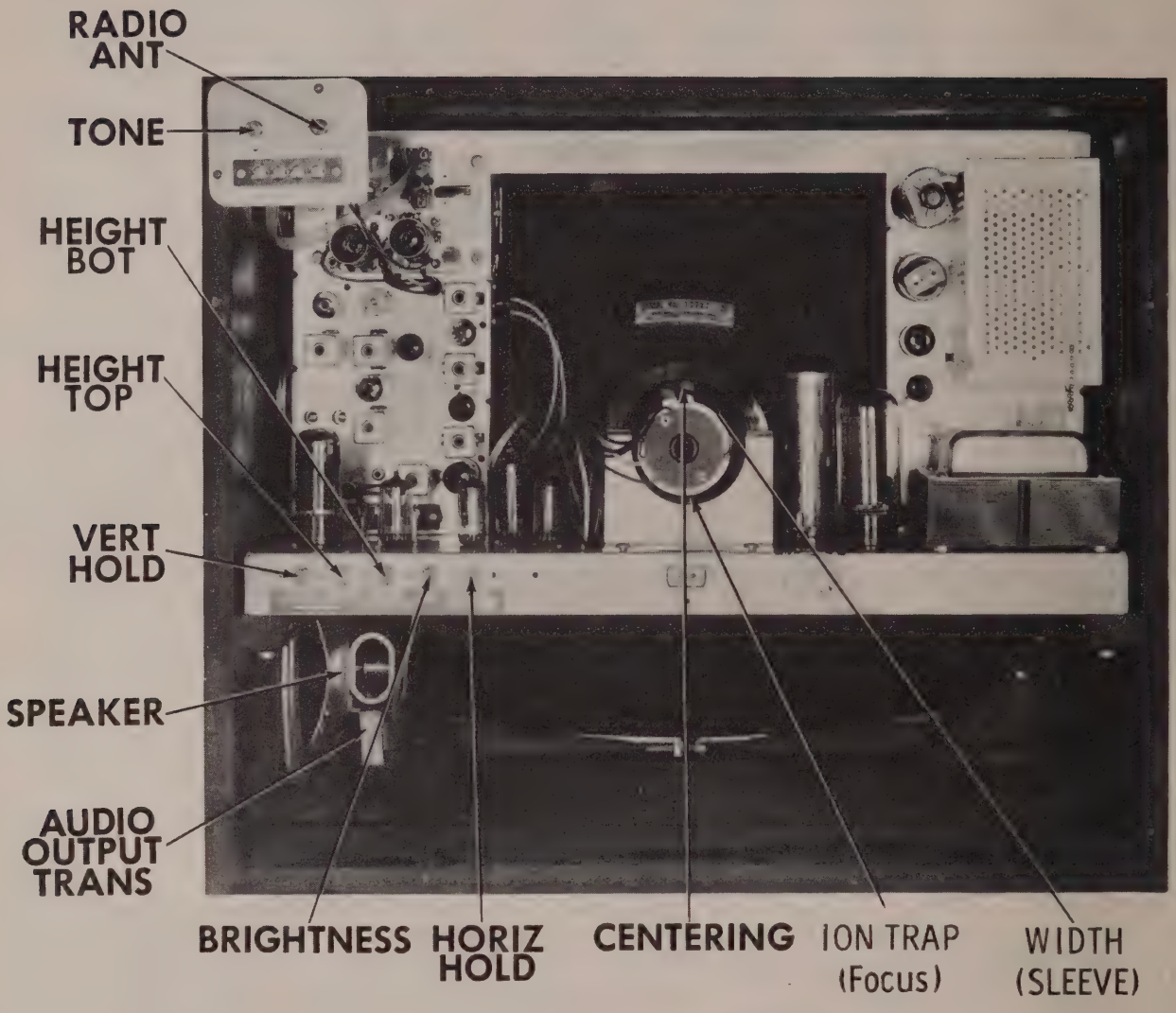
POWER, SYNC & VERTICAL CHASSIS - TOP VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station. Adjust the horizontal hold control until the picture synchronizes horizontally. If the control must be turned to either extreme to sync the picture or if slow warm-up causes frequency drift replace the 12AU7A (V17).

PROPERTY OF
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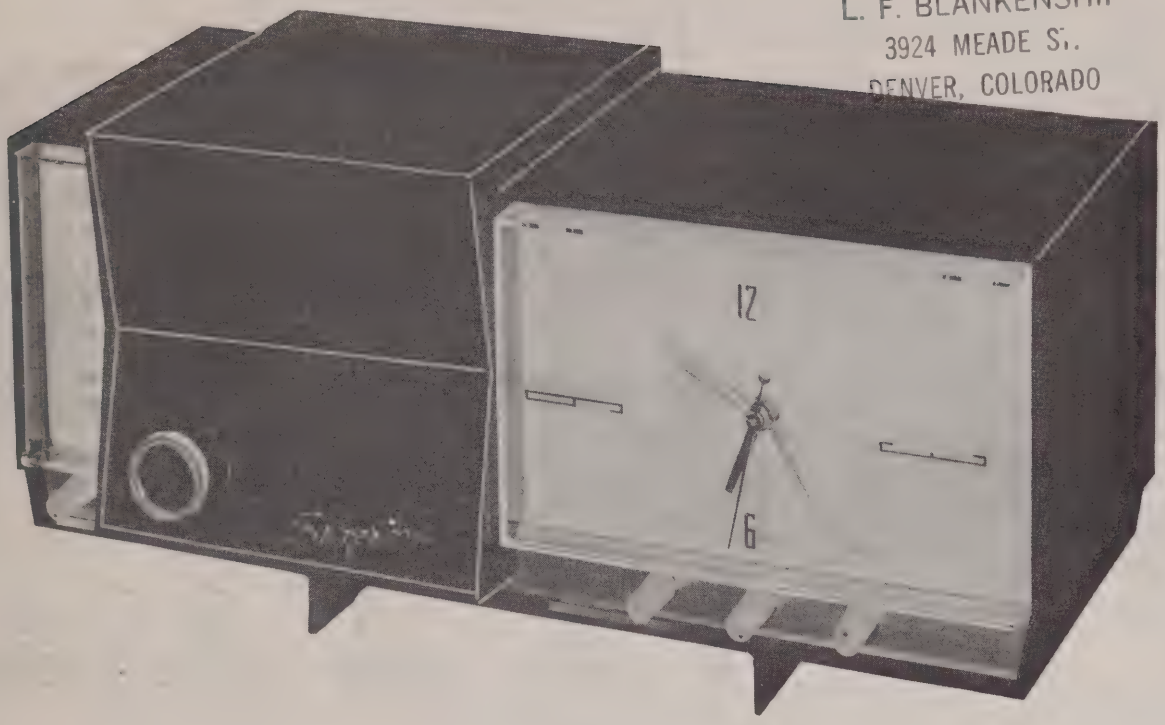
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS
7025, 7026, 7027 (Ch. 528.46700, 1)



SILVERTONE MODELS
7025, 7026, 7027 (Ch. 528.46700, 1)

TRADE NAME	Silvertone Models 7025, 7026, 7027 (Ch. 528.46700, 528.46701)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Illinois
TYPE SET	AC Operated AM Receiver With Calendar And Electric Clock
TUBES (Six)	Types 6BJ6 RF Amplifier, 12BE6 Converter, 6BJ6 IF Amplifier, 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles — RATING .28 Amp. @ 117 Volts AC (25 Watts Without Clock)
TUNING RANGE—BROADCAST	530KC - 1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1610KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 7025

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BJ6	
V2	Converter	12BE6	
V3	IF Amplifier	6BJ6	
V4	Det.-AVC-AF Amplifier	12AT6	
V5	Output	50C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	70	150	18-11-2	PRS150V50-3020	BBRD8415	TCT3107	TDLD-10	FMT-315	TVA-2460
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	400	16-50343	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	.05	200	16-50323	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	47		15-470168							
C5	5000		15-50217	BPD-005	DD-502	BYA6D5	GP-5000	DC525	5HK-D5	
C6	.05	400	16-50343	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C7	.047	400	20-477-1	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	24-247					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	82Ω		60-82001	BTS-82	
R3	10K		60-10301	BTS-10K	
R4	100K		60-10402	BTS-100K	
R5	22K		60-22302	BTS-22K	
R6	47Ω		60-47001	BTS-47	
R7	2.2Meg		60-22502	BTS-2.2Meg	
R8	47K		60-47302	BTS-47K	
R9	120Ω		60-12101	BTS-120	
R10	10K	2	60-10321	BTB-10K	
R11	1000Ω	1	60-10211	BTA-1000	
R12	15Ω		60-15001	BTS-15	Note 1

Note #1. Chassis #528.46701 Use 27Ω In This Application.

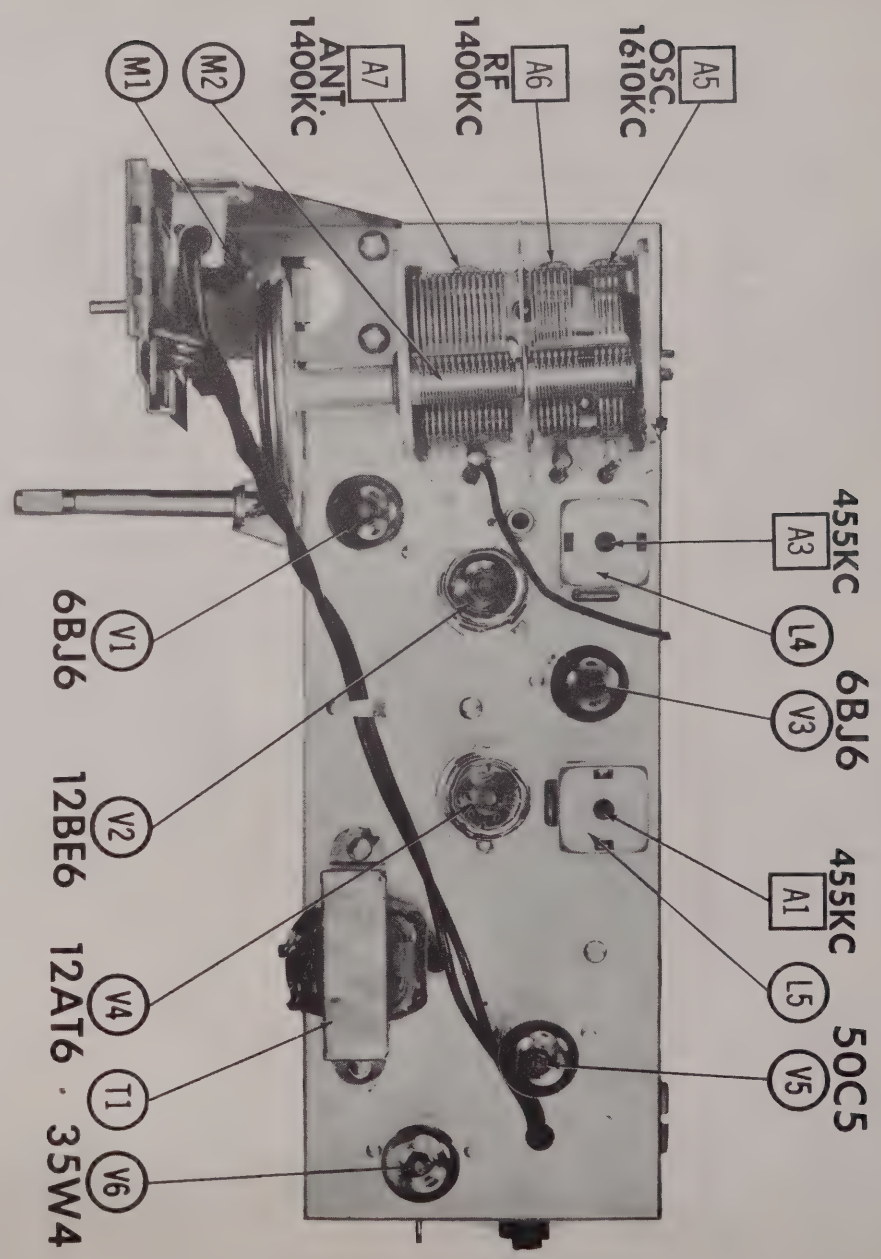
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	80-312	Z1001	A-2928	A-3876	24S50	S-1X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	79-468	5A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

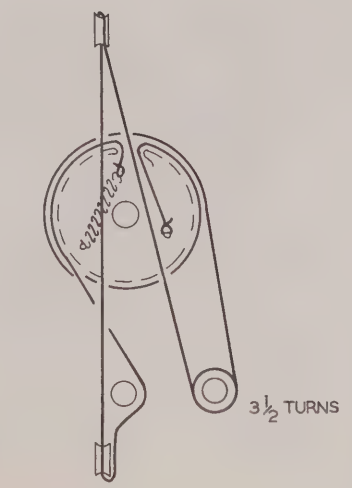
ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Loop	82-108				Includes Cabinet Back
L2	RF Coil	10-5-1				407 Microhenries
L3	Osc. Coil	10-4-4				276 Microhenries
L4	Input IF	10-45-2	16-6758	BC-352	12-C1	
L5	Output IF	10-46-2	16-6758	BC-353	12-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Det. -Audio Net	5000MMF, 5000MMF, 220MMF, 250MMF, 470K, 470K, 10Meg	13-10-3	Aerovox PA-306 Centralab PC-159 Sprague DT-6

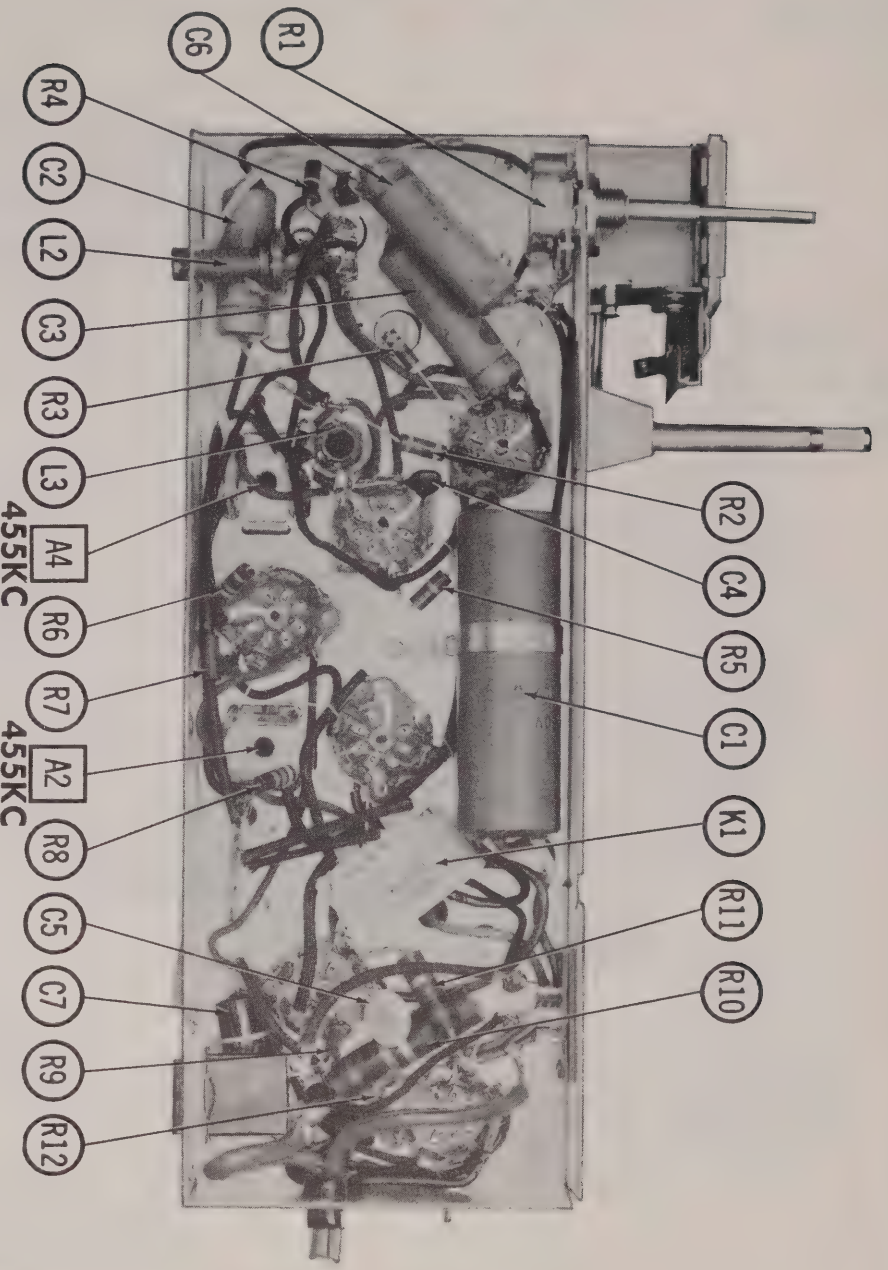
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Dial Light	89-7	#47
M2	Tuning Gang	19-267A	3 Gang (27-475MMF, 13-211MMF, 10-85MMF) Alternate Part #19-23-3
M3	Clock	84-2588	
	Crystal	48-127	Clock
	Crystal	48-126	Radio
	Knobs	52-712	Volume & Clock
	Knobs	52-713	Tuning
	Cabinet	42-857	Brown, Model 7025
	Cabinet	42-858	Ivory, Model 7026
	Cabinet		Pink, Model 7027



DIAL CORD STRINGING

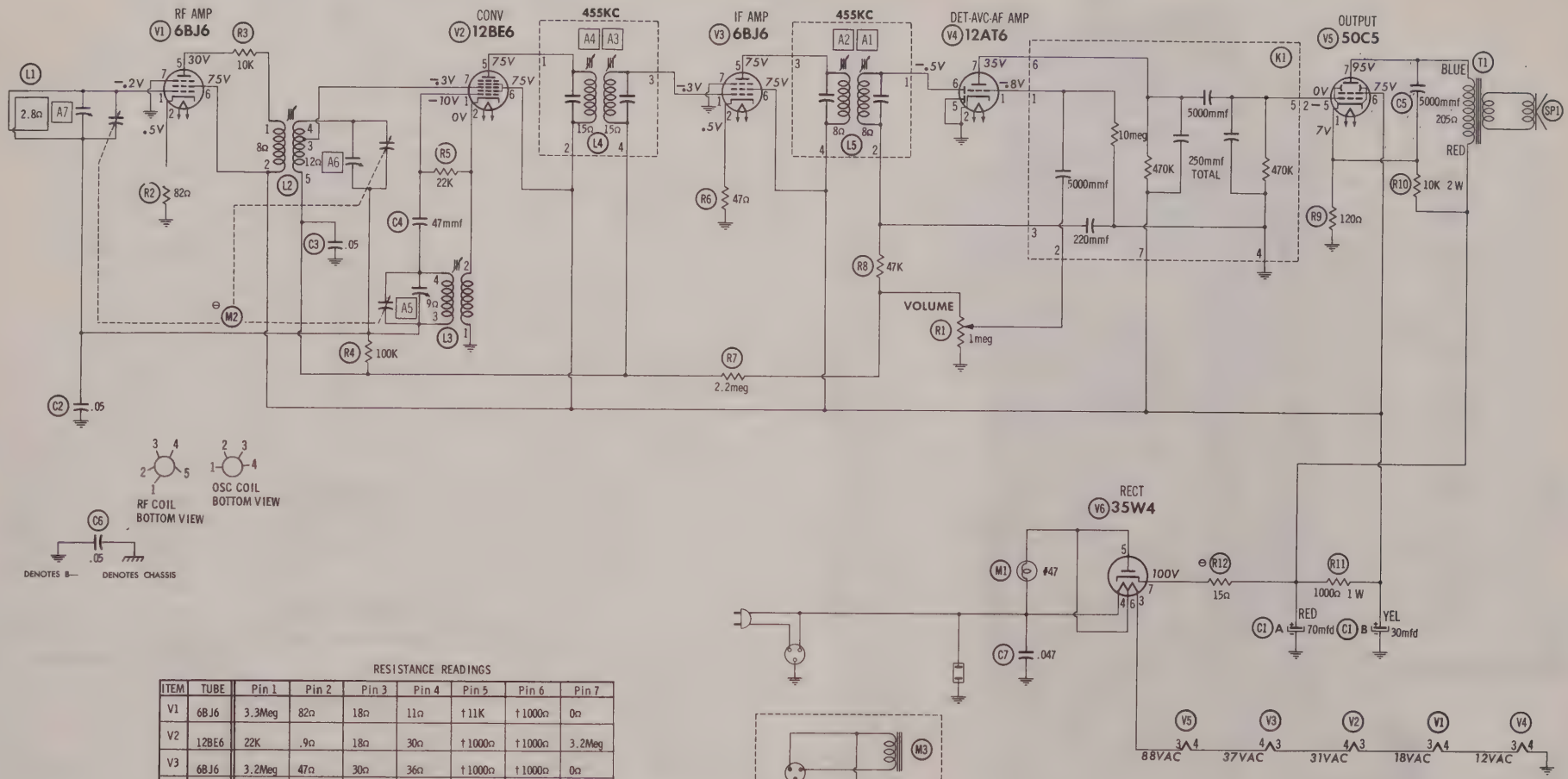
CHASSIS—BOTTOM VIEW



SET 355 FOLDER 10

SILVERTONE MODEL 7025

SILVERTONE MODEL 7025



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	6BJ6	3.3Meg	82Ω	18Ω	11Ω	†11K	†1000Ω	0Ω
V2	12BE6	22K	.9Ω	18Ω	30Ω	†1000Ω	†1000Ω	3.2Meg
V3	6BJ6	3.2Meg	47Ω	30Ω	36Ω	†1000Ω	†1000Ω	0Ω
V4	12AT6	10Meg	0Ω	11Ω	0Ω	0Ω	1Meg	†470K
V5	50C5	120Ω	470K	85Ω	36Ω	470K	†1000Ω	†220Ω
V6	35W4	TP	TP	85Ω	120Ω	115Ω	115Ω	20K

† MEASURED FROM PIN 7 OF V6.
TP TIE POINT.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

THROUGH CAMS AND LINKAGES, ONE SW. PERFORMS ALL FUNCTIONS OF OFF, ON, AUTO, AND SLEEP

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DENVER, COLORADO

SILVERTONE MODELS 7250, 7251, 7299 (Ch. 567.33010)

SILVERTONE MODELS 7250, 7251, 7299 (Ch. 567.33010)

TRADE NAME	Silvertone Models 7250, 7251, 7299 (Ch. 567.33010)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Illinois
TYPE SET	AC Operated Phono Amplifier With 4 Speed Automatic Record Changer
TUBES (Five)	Types 12AX7 AF Amplifier, 12AX7 AF Amplifier - Phase Inv., (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .8 Amp. @ 117 Volts AC (78 Watts Without Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER 567.41001 OR 567.41101 — SEE SIMILAR CRESCENT 500 SERIES — PHOTOFACT SET 197 FOLDER 4 OR RECORD CHANGER MANUAL CM-5.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 7250

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AX7	
V2	AF Amp.-Phase Inverter	12AX7	
V3	Output	6V6GT	
V4	Output	6V6GT	
V5	Rectifier	5Y3GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲30	450	770130	AFH3-131	C1020	FP396	TMT-130	T-675	TVL-3741
B	■30	450							
C	▲20	25							
C2A	▲20	350	770131	AFH2-69	B0500	FP237	TMD-61	D-270	TVL-2935
B	●20	350							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No,	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	5000		770134	BPD-005	DD-502	BYA6D5	GP-5000	DC525	5HK-D5	
C4	100		770112	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C5	220		770139	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C6	10000		770096	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C7	750		770094	BPD-00075	DD-751	BYA10T75	ED-750	UC-5375	5GA-T75	
C8	330		770138	BPD-00033	DD-331	L10T33	ED-330	UC-5333	5GA-T33	
C9	1500		770137	BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C10	2000		770136							
C11	5000		770134	BPD-005	DD-502	BYA6D5	GP-5000	DC525	5HK-D5	
C12	3000		770135	BPD-003	DD-302	BYA10D3	GP-3000	UC-523	5HK-D3	
C13	.05	400	770005	BPD-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C14	2000		770136							
C15	20000		770092	BPD-02	DD-203	BYA10S2	ED-02		5HK-S2	
C16	220		770139	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C17	2000		770136							
C18	220		770139	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C19	.1	400	770007	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C20	1000	1000	770140	HVD-15-1000	DD-102	BYA6D1	1R5KV-102	DC3021	10GA-D1	
C21	.1	400	770007	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C22	.047	400	770083	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C23	.047	400	770083	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

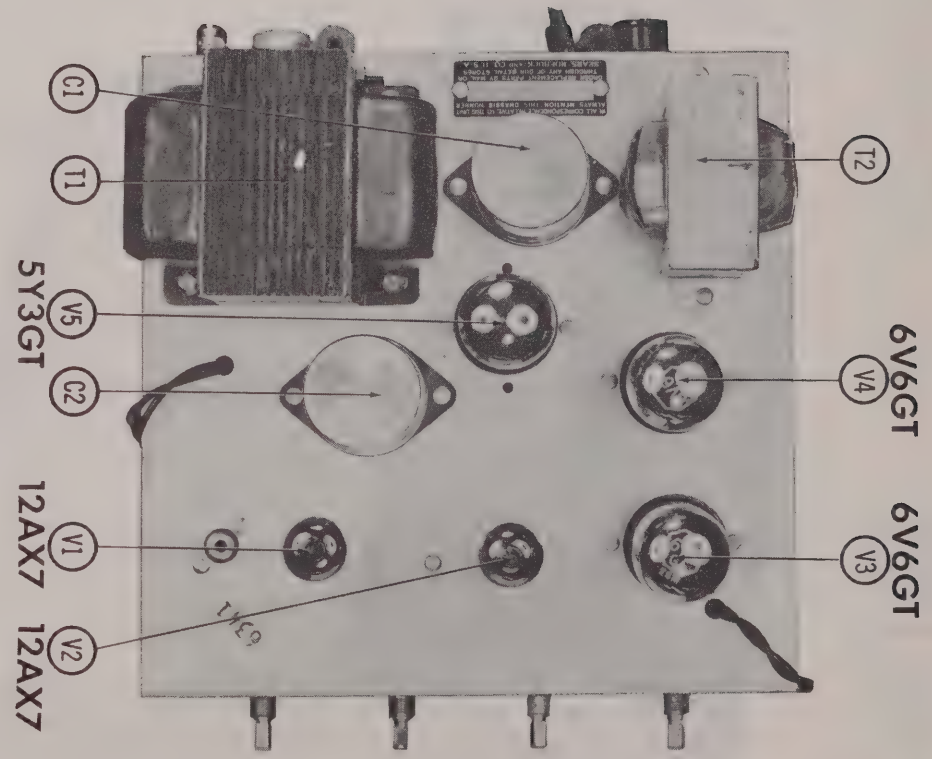
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	740071	BT-72	A47F4-1Meg	Q13-137X	UT-440	Volume, Tap at 200K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1Meg	½	740073	B-70	A47-1Meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1Meg	½	740072	B-70	A47-1Meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	US-26	
R4	200Ω	2	740045					Hum Adjust (Wire-Wound)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	NOTES
R5	220K		760036	BTS-220K	
R6	330K		760022	BTS-330K	
R7	47K		760013	BTS-47K	
R8	220K		760036	BTS-220K	
R9	100K		760060	BTS-100K	
R10	560K		760039	BTS-560K	
R11	1.5Meg		760072	BTS-1.5Meg	
R12	2200Ω		760068	BTS-2200	
R13	220K		760036	BTS-220K	
R14	220K		760036	BTS-220K	
R15	2200Ω		760068	BTS-2200	
R16	47K		760013	BTS-47K	
R17	150K		760008	BTS-150K	
R18	10K		760019	BTS-10K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R19	100K		760060	BTS-100K	
R20	220K		760036	BTS-220K	
R21	2200Ω		760068	BTS-2200	
R22	12K		760069	BTS-12K	
R23	220K		760036	BTS-220K	
R24	2200Ω		760068	BTS-2200	
R25	27K		760034	BTS-27K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R26	330K		760022	BTS-330K	
R27	15K		760038	BTS-15K	
R28	470K		760037	BTS-470K	
R29	200Ω	5	760313	PW7-200	
R30	27K		760034	BTS-27K	
R31	500Ω	10	760407	PW10-500	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ .8A	705VCT @ .095A	5VAC @ 2A	6.3VAC @ 2A	700084	P9310 ①		PC8409 ①	24R04U ①	R-11A ①

① Tape Center Tap On 6.3V Winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω	6-8Ω tapped @ 3-4Ω	700101	Z-1404 ①	A-3027	A-3335 ①	22S58	S-29X	① Drill New Mtg. Hole

SPEAKER

ITEM No.	SILVERTONE TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	013193 ①	12A6 ①	① Connect in series and/or parallel arrangement & phase.
SP2	5"	PM	3-4Ω	013192 ①	5A15TZ3.2 ①	
SP3	5"	PM	3-4Ω	013192 ①	5A15TZ3.2 ①	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M1	720126	55-T	GD	56	PT-2	

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

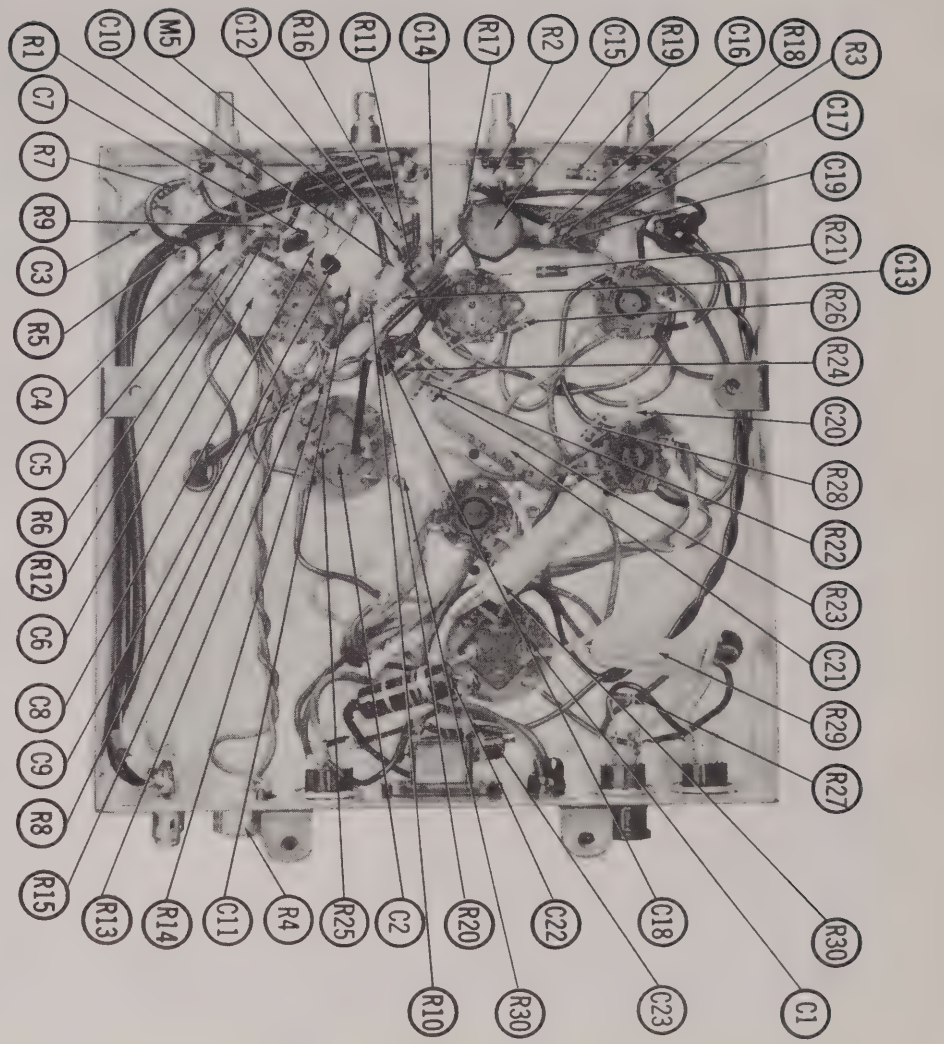
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	JENSEN PART No.	WALCO PART No.	
M2	720134	† S-61 or †♦ S-61SD or ♦ S-61D	† W-77TPS or †♦ W-77DS or ♦ W-77TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Pilot Light	730016	#47
M4	Pilot Light	730016	#47
M5	Switch	740091	Record Compensator
M6	Phono Motor	012982	Used In Chassis 567.41001
	Phono Motor	012979	Used In Chassis 567.41101
	Knob	310402	On-Off-Treble, Bass, Volume
	Knob	310420	Compensator
	Cabinet	440325	Mahogany Console
	Cabinet	440326	Limed Oak Console

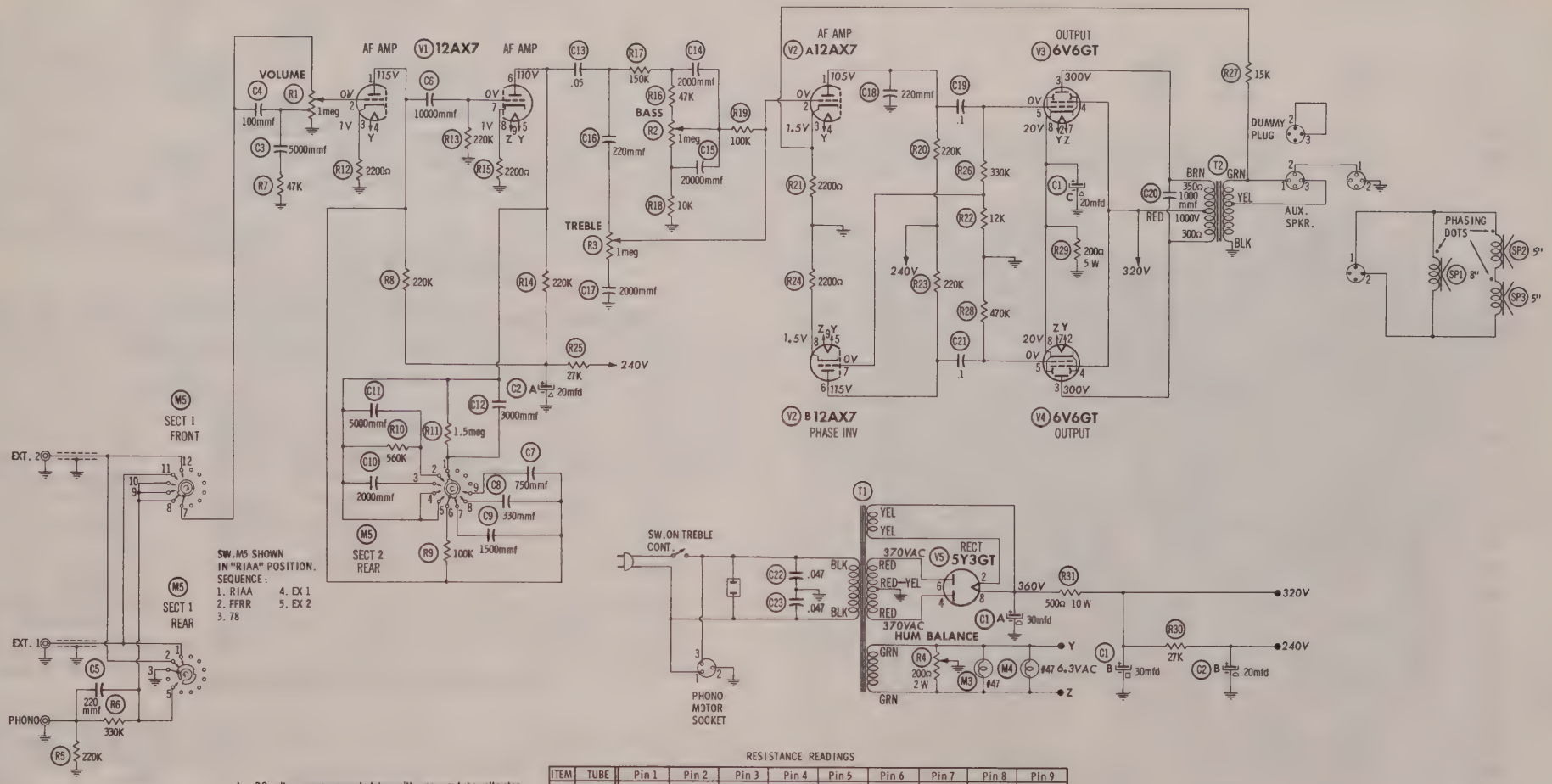
CHASSIS—BOTTOM VIEW



SET 355 FOLDER 11

SILVERTONE MODEL 7250

SILVERTONE MODEL 7250



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†275K	0Ω	2200Ω	42Ω	42Ω	†275K	220K	2200Ω	42Ω
V2	12AX7	†250K	110K	2200Ω	42Ω	42Ω	†250K	12K	2200Ω	42Ω
V3	6V6GT	NC	42Ω	†850Ω	†500Ω	340K	TP	42Ω	200Ω	
V4	6V6GT	NC	42Ω	†800Ω	†500Ω	470K	TP	42Ω	200Ω	
V5	5Y3GT	NC	50K	TP	100Ω	TP	90Ω	NC	50K	

† MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION.
TP TIE POINT.

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PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

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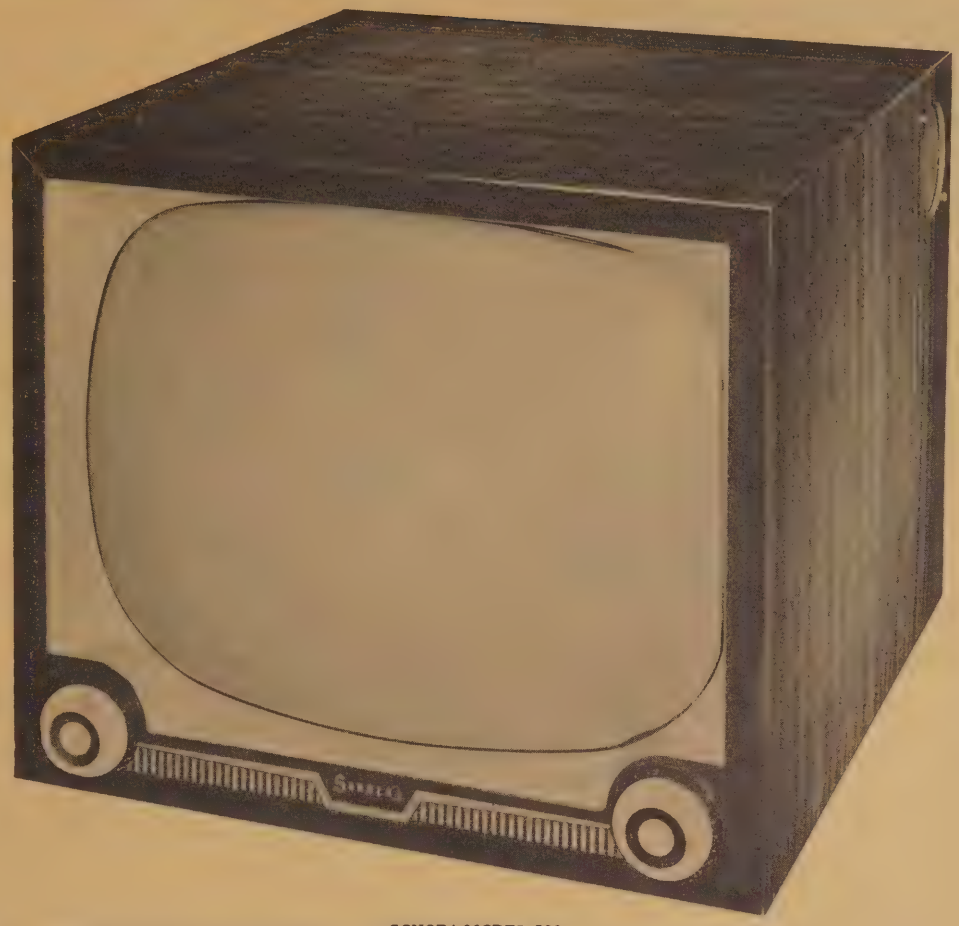

SONORA MODEL 529

TRADE NAME	Sonora Models 518, 523, 527, 529, 530, 533, 558, 587, 588
MANUFACTURER	Sonora Radio & Tel. Corp., 325 North Hoyne Avenue, Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	105-125 Volts AC, 60 Cycles RATING 115 Watts, 1.1 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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DATE 4-57 SET 355 FOLDER 12

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

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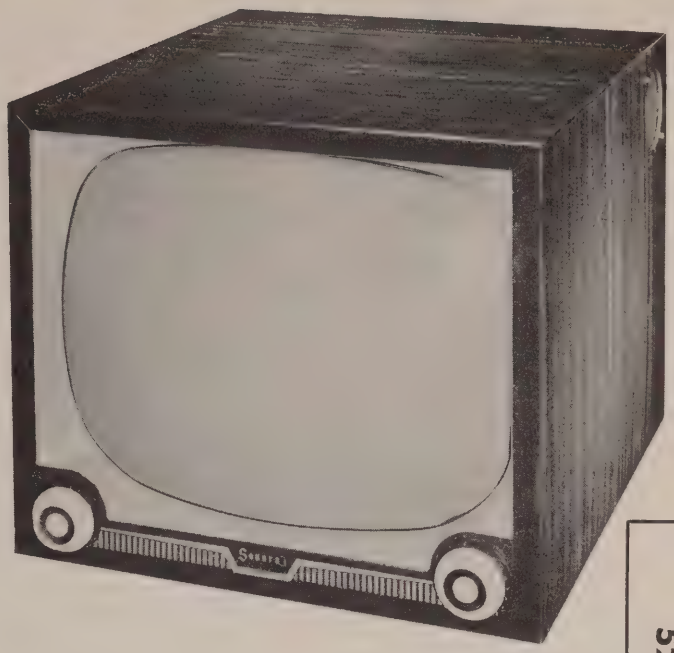
SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588



DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 4 push-on type control knobs from the front.
2. Remove 2 screws and the antenna terminal board.
3. Remove 6 metal screws and the rear cover.
4. Remove 2 speaker leads.
5. Remove 7 bolts from outer edge of bottom board.
6. Tilt rear of cabinet up, slide forward and remove.
7. Remove 2 speaker bolts and speaker.
8. Remove HV lead.
9. Remove 4 chassis bolts from bottom of board to remove the chassis completely.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physcially contacting chassis.

MODEL

529

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, as the channel selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See disassembly instructions.)

FOCUS

Adjust the Ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The horizontal frequency coil is used as the horizontal hold control. Adjust the horizontal hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location see tube placement chart.)

FUSES

A 5.5Ω fusible resistor (R77) is used for LV power supply protection. (For location see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

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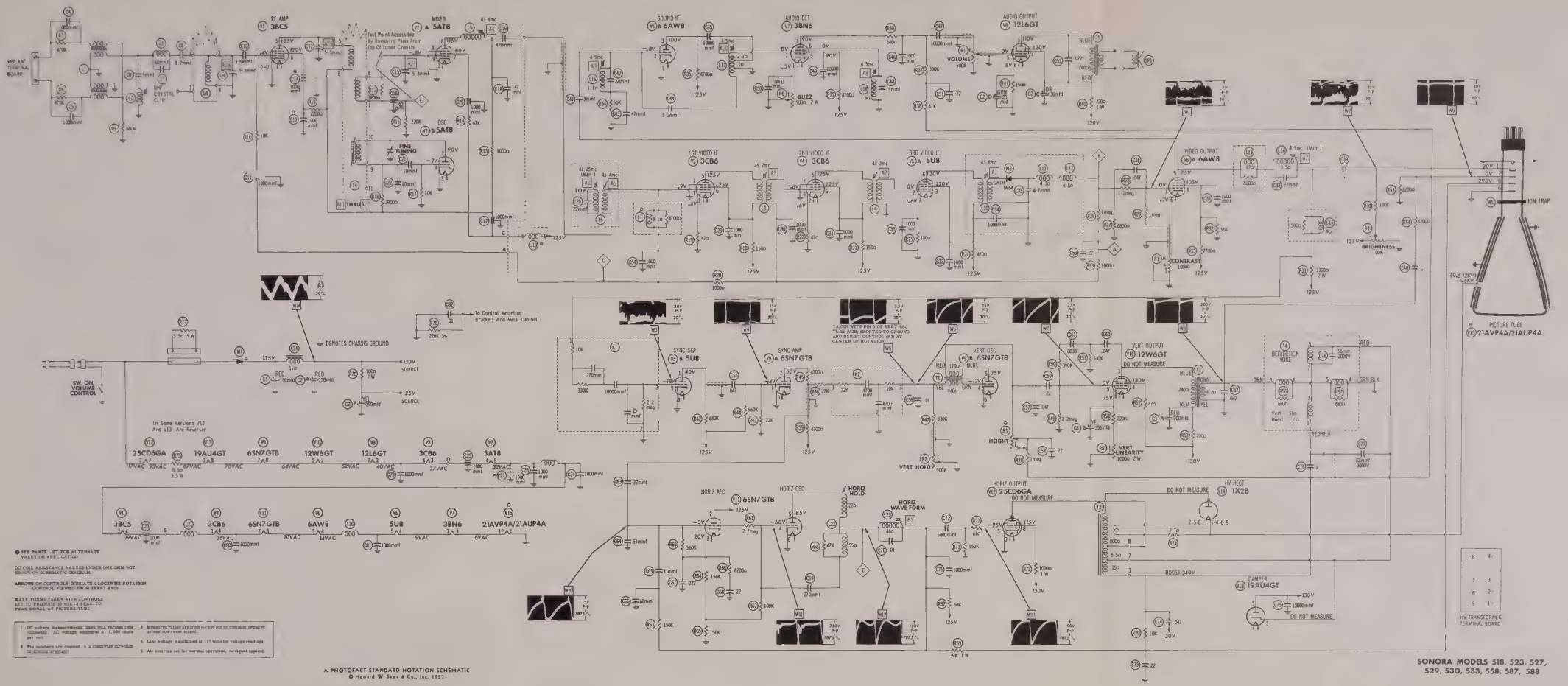
SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
In Some Versions V12 And V13 Are Reversed
25CD6GA 19AU4GT 6SN7GTB 12W6GT 12L6GT 3CB6 5AT8
3BC5 3CB6 6SN7GTB 6AW8 5U8 3BN6 21AVP4A/21AUP4A
SYNC SEP V5 B 5U8
SYNC AMP V9 A 6SN7GTB
VERT OSC V9 B 6SN7GTB
VERT OUTPUT V10 12W6GT
HORIZ AFC V11 6SN7GTB
HORIZ OSC
HORIZ OUTPUT V12 25CD6GA
HV RECT V14 1X2B
DAMPER V13 19AU4GT
VIDEO OUTPUT V6 A 6AW8
1ST VIDEO IF V3 3CB6
2ND VIDEO IF V4 3CB6
3RD VIDEO IF V5 A 5U8
SOUND IF V5 B 6AW8
AUDIO DET V7 3BN6
AUDIO OUTPUT V8 12L6GT
RF AMP V1 3BC5
MIXER V2 A 5AT8
OSC V3 B 5AT8
VOLUME 500K
BUZZ 500Ω 2 W
CONTRAST 1000Ω
BRIGHTNESS 100K
HEIGHT 5meg
VERT LINEARITY 1000Ω 2 W
VERT HOLD 500K
HORIZ HOLD
HORIZ WAVE FORM
BOOST 349V
DO NOT MEASURE
ION TRAP
PICTURE TUBE V16 21AVP4A/21AUP4A
HV TRANSFORMER TERMINAL BOARD
TO CONTROL MOUNTING BRACKETS AND METAL CABINET
TAKEN WITH PIN 5 OF VERT OSC TUBE (V9B) SHORTED TO GROUND AND HEIGHT CONTROL (R3) AT CENTER OF ROTATION
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 83 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1,000 ohms per volt.
2 Pin numbers are counted in a clockwise direction as viewed from socket end of tube.
3 Measured values are from socket pin to common negative unless otherwise stated.
4 Line voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE S.
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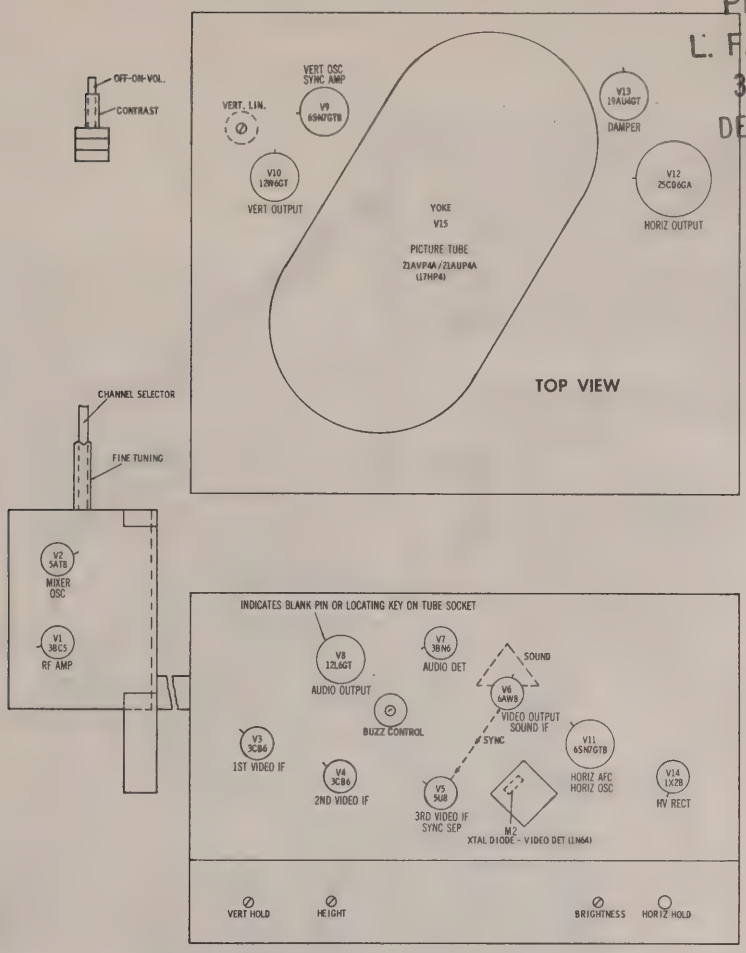


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

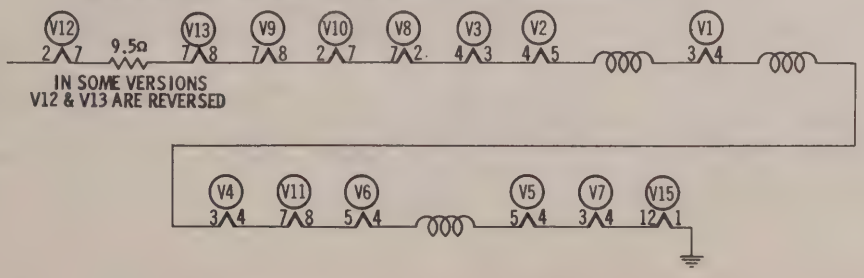
POWER SUPPLY FAILURE
No raster, no sound - **Fusible Resistor (R77), Rectifier (M1)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M2), V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V15**
Has pic, no sound - **V6, V7, V8**

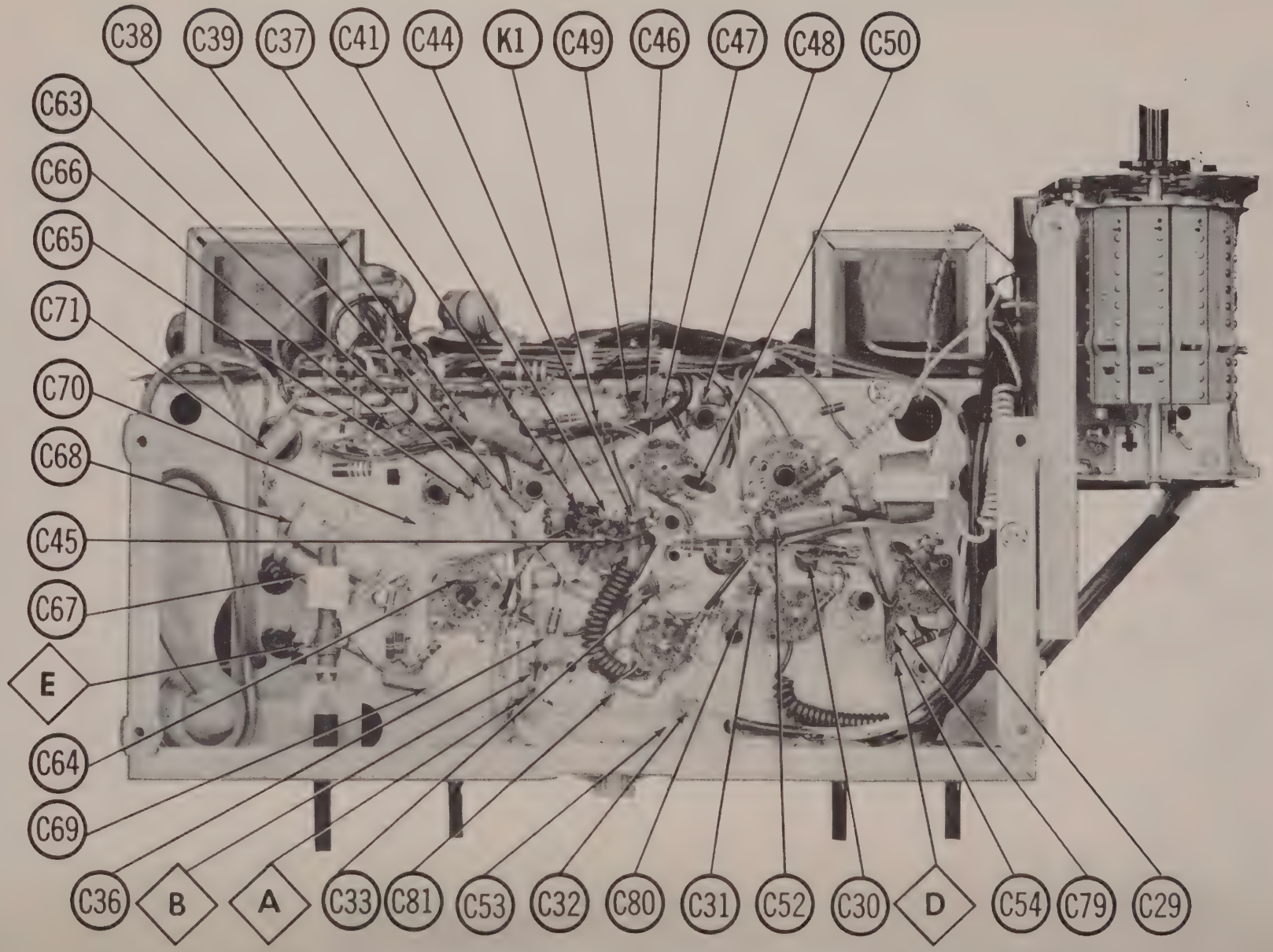
SYNC FAILURE
No vert. sync - **V5, V9**
No horiz. sync - **V5, V9**
No vert. or horiz. sync - **V5, V9**

SWEEP FAILURE
No raster, has sound - **V11, V12, V13, V14, V15**
No vertical deflection - **V9, V10**
Poor vert. linearity or foldover - **V9, V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, M1**
Vert. off freq. - **V9**
Horiz. off freq. - **V11**

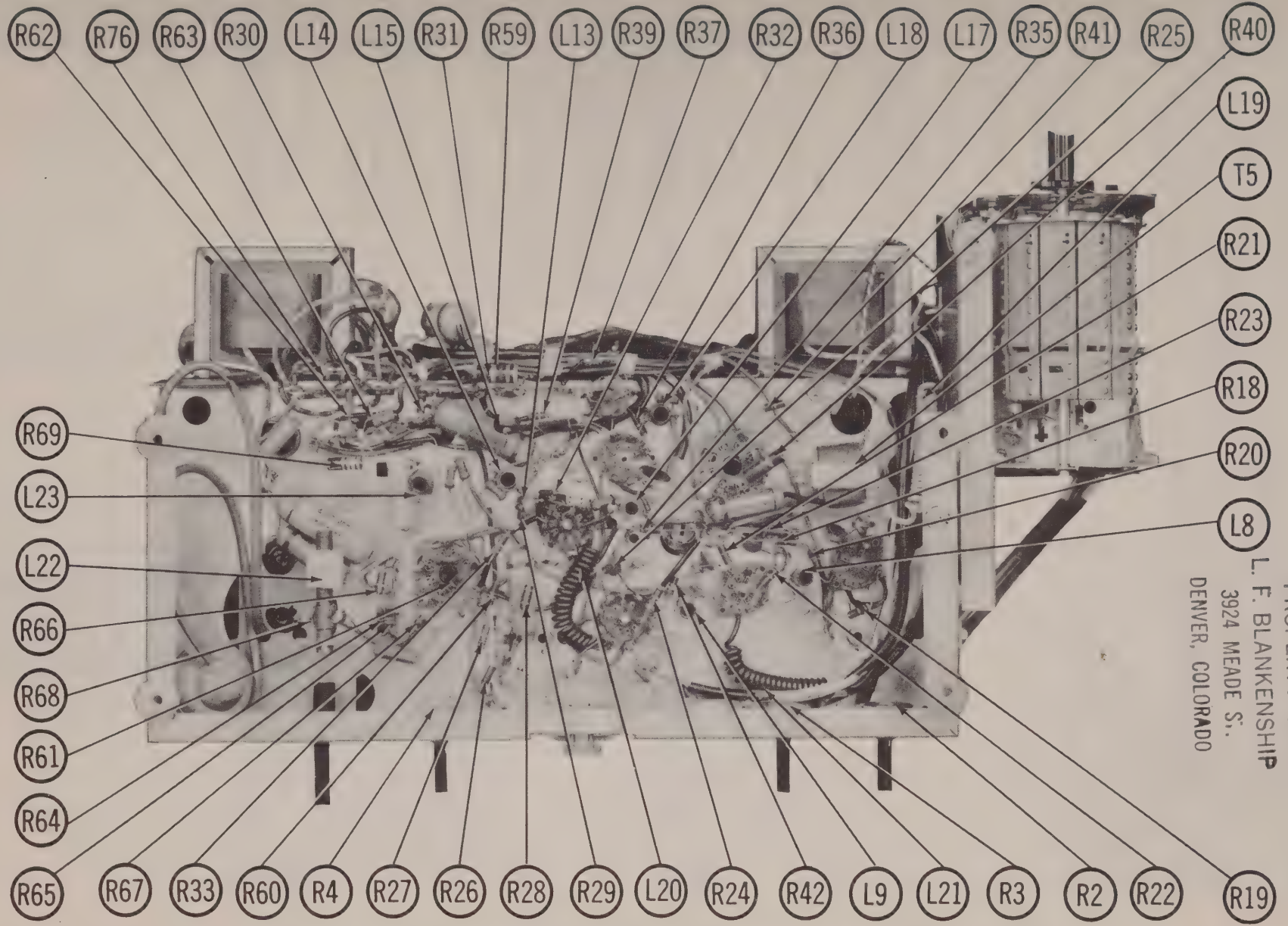
This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative . (See circuit below.)



SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V2). Low side to chassis.	Not Used	43.8MC (unmod)	Any unused channel.	USE VTVM DC probe to point (B). Common to chassis.	A1	Adjust for maximum deflection. Keep generator output adjusted to maintain approximately 1 volt on VTVM.
2.	"	"	"	43.3MC	"	"	A2	"
3.	"	"	"	45.2MC	"	"	A3	"
4.	"	"	"	43.8MC	"	"	A4	Preset A5 fully counter clockwise. Adjust A4 for maximum deflection. Use only enough generator output to provide usable indication on VTVM.
5.	"	"	"	45.4MC	"	"	A5	Adjust for maximum deflection. Use only enough signal to produce about 1 volt on VTVM.
6.	"	"	"	41.25MC	"	"	A6	Increase generator output and adjust A6 for MINIMUM deflection.
7.	"	"	45MC (10MC Swp)	41.25MC 42.9MC 45.75MC	"	Vert. amp. thru 10K to point (B). Low side to chassis.		Use only enough sweep generator output to provide usable pattern on scope. SLIGHTLY retouch A1, A2 and A3, if necessary, for response similar to Fig. 1 with markers as indicated.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to pin 7 (grid) of 6AW8 (V6). Low side to chassis.	Not Used	4.5MC (400~ 30% AM Mod.)	Any unused channel.	Vert. amp. thru detector probe (Fig. 2) to pin 11 (cathode) of picture tube. Low side to chassis.	A7	Adjust for MINIMUM 400~ indication on scope.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to pin 7 (grid) of 6AW8 (V6). Low side to chassis.	4.5MC (400~ FM 50KC Swp)	Not used.	Any unused channel.	Across volume control.	A8, A9, A10	Use very low signal level. Preset buzz control (R6) at mid-range. Adjust A8, A9 and A10 for maximum 400~ indication on scope.
10.	"	"	"	"	"	"	R6	Adjust generator output to point where the 3BN6 just begins to limit. Adjust buzz control (R6) for MINIMUM 400~ indication on scope.
11.	"	"	"	"	"	"	A8	Increase generator output above limiting level. Readjust A8 for maximum 400~ indication on scope.

ALTERNATE SOUND IF ALIGNMENT USING ON THE AIR SIGNAL

Set the buzz control at mid-range position. Using a strong signal adjust A8 for maximum sound output.
Reduce the signal strength, by either removing the antenna or using an attenuator in series with the antenna, until the signal is below the limiting level of the 3BN6 as evidenced by a hiss in the sound similar to super regeneration. Adjust A9 and A10 for maximum sound output while keeping the signal below the limiting point.
Using a medium strength signal, adjust the buzz control (R6) for MINIMUM buzz.
Change input to a strong signal and retouch A8 for maximum output.

OSCILLATOR ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (D). Positive to chassis.
The channel adjustment screws are reached through a hole above and just to the left of the channel selector shaft. The correct adjustment screw is accessible through this hole as the channel selector is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 47K to point (B). Low side to chassis.	A11	Adjust to place sound marker in trap notch as in Fig. 3. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

ALIGNMENT INSTRUCTIONS (cont)

RF AND MIXER ALIGNMENT

Connect bias as under "Oscillator Alignment".
Connect a 1000MMF capacitor from pin 1 (grid) of 3CB6 (V3) to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205. 25MC 209. 75MC	12	Vert. amp. thru 10K to point C. Low side to chassis.	A23, A24, A25	Adjust for response curve similar to Fig. 4 with markers above 90%.
14.	"	"	213MC (10MC Swp)	211. 25MC 215. 75MC	13	"		Check for response similar to Fig. 4. If markers fall below 70% on any channel, make compromise adjustments of A23, A24 and A25 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected. Remove the 1000MMF capacitor from V3.
			201MC (10MC Swp)	199. 25MC 203. 75MC	11			
			195MC (10MC Swp)	193. 25MC 197. 75MC	10			
			189MC (10MC Swp)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp)	77. 25MC 81. 75MC	5			
			69MC (10MC Swp)	67. 25MC 71. 75MC	4			
			63MC (10MC Swp)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp)	55. 25MC 59. 75MC	2			

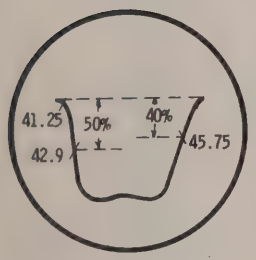


FIG. 1

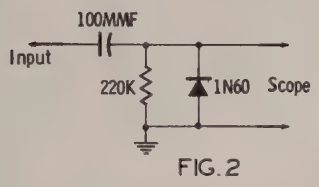


FIG. 2

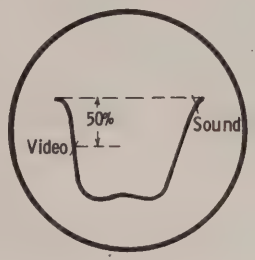


FIG. 3

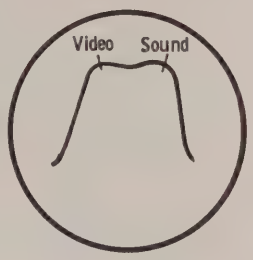
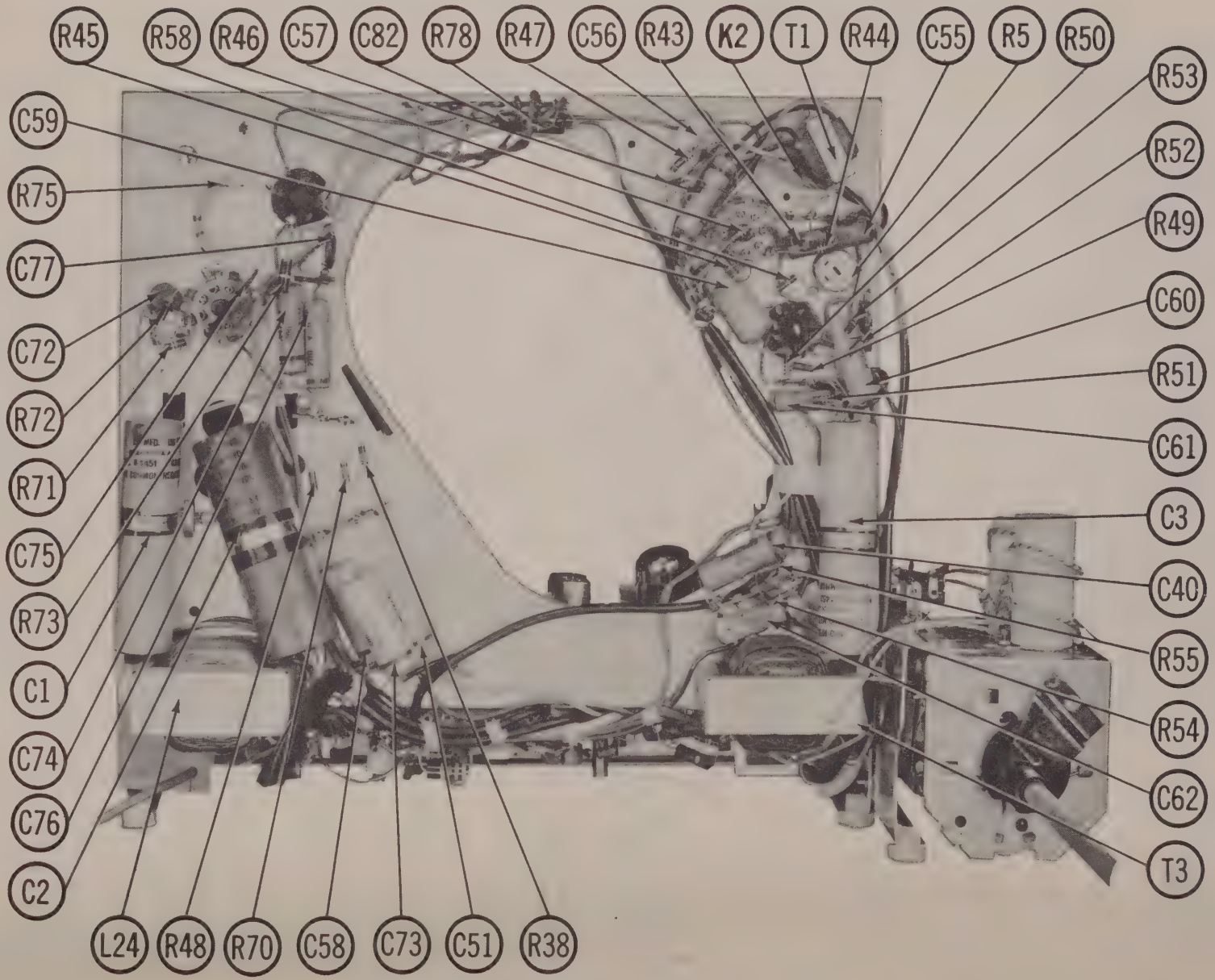


FIG. 4



VERTICAL CHASSIS - BOTTOM VIEW

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the horizontal hold until the picture synchronizes horizontally. Connect the vertical amplifier of the oscilloscope to point (E) thru a low capacity probe. Readjust the horizontal hold if necessary to keep the picture in sync. Adjust the horizontal waveform slug (B1) for a waveform similar to Fig. 5 with the round and sharp peaks of equal amplitudes.

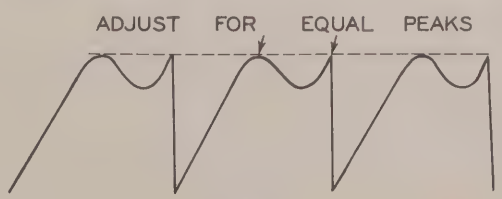
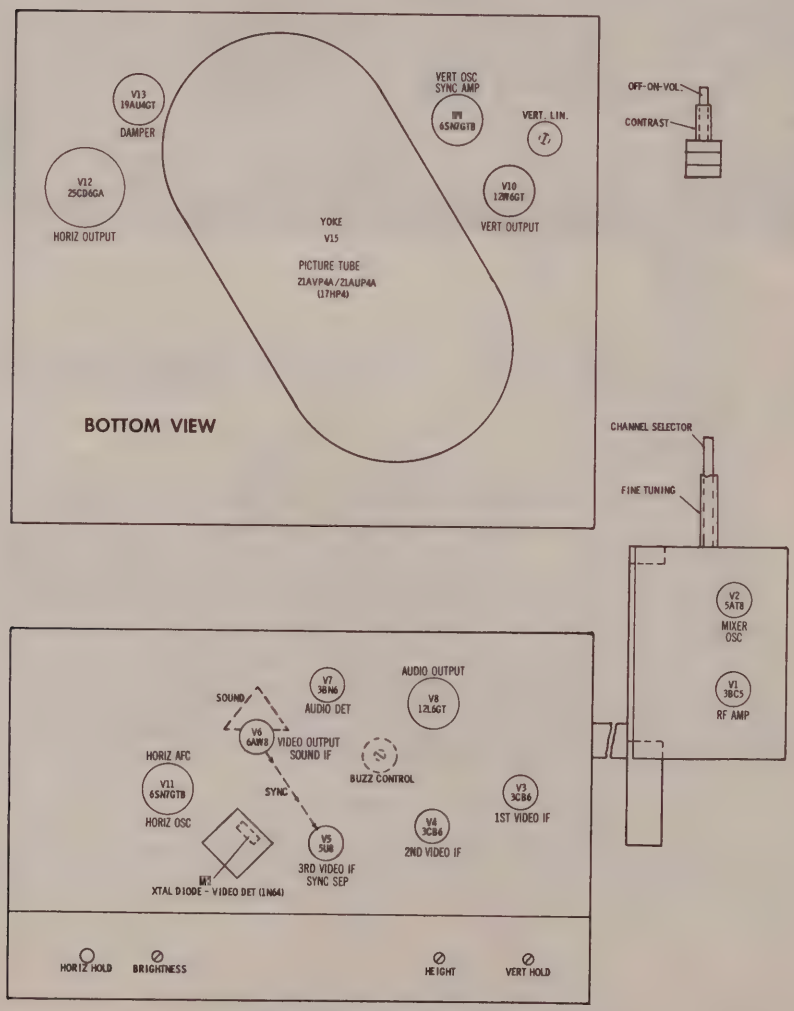


FIG. 5

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	1Meg	0Ω	8.5Ω	7.5Ω	†115Ω	†2300Ω	0Ω		
V2	5AT8	10K	†4000Ω	0Ω	9.5Ω	8.5Ω	†1100Ω	†47K	0Ω	220K
V3	3CB6	1Meg	47Ω	9.5Ω	10Ω	†250Ω	†250Ω	0Ω		
V4	3CB6	1Meg	47Ω	7.5Ω	6.5Ω	†250Ω	†250Ω	0Ω		
V5	5U8	†680K	.1Ω	†600Ω	2.5Ω	3.5Ω	†600Ω	180Ω	0Ω	2.2Meg
V6	6AW8	0Ω	56K	†4800Ω	3.5Ω	5.5Ω	•70Ω	1Meg	†2800Ω	†3400Ω
V7	3BN6	•180Ω	3.1Ω	2.5Ω	1.5Ω	†4800Ω	5.3Ω	†480K		
V8	12L6GT	NC	10Ω	†470Ω	†230Ω	500K	NC	12Ω	150Ω	
V9	6SN7GTB	22K	†9500Ω	0Ω	•650K	•‡3.2Meg	0Ω	16Ω	14Ω	
V10	12W6GT	NC	14Ω	†430Ω	†60Ω	2.2Meg	NC	12Ω	•450Ω	
V11	6SN7GTB	650K	†115Ω	300K	250K	†68K	0Ω	6.5Ω	5.5Ω	
V12	25CD6GA	NC	33Ω	0Ω	TP	150K	NC	27Ω		TOP CAP ‡6.5Ω
V13	19AU4GT	NC	NC	130K	NC	†15Ω	NC	18Ω	16Ω	
V14	1X2B	PINS 1 THRU 9 HAVE INFINITE RESISTANCE								TOP CAP ‡805Ω
V15	21AUP4A	0Ω	2200Ω	Pin 6 0Ω	Pin 10 ‡10K	Pin 11 100K	Pin 12 1.5Ω			

† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V13.
• THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS TOP VIEW

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp.	3BC5	
V2	Mixer-Osc.	3AT6	
V3	1st Video IF Amplifier	3CB6	
V4	2nd Video IF Amplifier	3CB6	
V5	3rd Video IF Amplifier		
	Sync-Sep.	3U6	
V6	Video Output		
	Sound IF Amp.	6AW8	
V7	Audio Det.	3BN6	

ITEM No.	USE	TYPE	NOTES
V8	Audio Output	12L6GT	
V9	Vert. Osc.		
	Sync Amp.	6SN7GTB	
V10	Vert. Output	12W6GT	
V11	Horiz. AFC		
	Horiz. Osc.	6SN7GTB	
V12	Horiz. Output	25L6GA	
V13	Damper	1N4 GT	
V14	HV Rectifier	1X2B	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	SONORA PART No.	RCA PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V15	21AUP4A 21AUP4A	21AUP4A ①	21AUP4A ①	21AUP4A ①	Aluminized ② Silver Screen 85
	21AUP4 21AVP4B-A ①	21AUP4 21AVP4B-A ①	21AUP4 21AVP4A ①	21AUP4 21AVP4B ②	
	17HP4	17HP4, 17HP4A	17HP4, 17HP4A	17HP4 17HP4	
		17HP4B ①	17HP4B ①	17HP4B ②	
			17HP4A		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP	VOLT	SONORA PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	150	150	R-1451	PRI-100	BR1505	WS427	TD-150-150	MT-15150	TVA-1433
C2A	50	150	R-1467			1CT2107		Q-150	H3272†
B	150	50				WD425		MT-0325	
C	50	50							
D	50	25							
C3A	100	50	R-1452	PRI-300				MT-15100	H3274†
B	200	25						MT-0325	

† Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd for Paper Capacitors, and in mmfd for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	1000		R-1449	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C5	1000		R-1449	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C6	.5		1.5% #6/20D	MPG-SI 5	TCE-5	C10Y5C	TCO-5	ET-555	5TCCB-Y4T	
C7	68		1% #LA580K	MT50-SI 68	TCN-68	C10Q68U	TCT-68		STCC-Q68	
C8	8.2		1% #CN82D	MPG-SI 8.2	TCE-8.2	C10Y8SC	TCO-8.2			
C9	3-3				339-3		31S-D	CT5S6A		
C10	120		1% #121K	BPD-00012	DD-121	L10T1S	RD-120	UC-5121	5GA-T1S	
C11	1000		13M320EA022C	EF-001	MPT-1000				5GAC-D1	
C12	3-3				339-3		31S-D	CT5S6A		
C13	1000		R-1449	BPD-001	DD-103	BYAED1	ED-1000	DC521	5HK-D1	Note 1
C14	1000		13M320EA022C	EF-001	MPT-1000				5GC-D1	
C15	3-3				339-3		31S-D	CT5S6A		
C16	60		13M-320-4S07							
C17	1000		13M320EA022C	EF-001	MPT-1000				5GC-D1	
C18	47		13[illegible]-4707		TCM-47	C10Q47U	TCT-47	MT-5447	STCC-Q47	
C19	470		13[illegible]-4707	BPD-00047	DD-471	BYAJD147	ED-470	UC-5347	5GA-T47	
C20	.000		13M320EA022C	EF-001	MPT-1000				5GC-D1	
C21	10		13[illegible]-A							
C22	10		13[illegible]-A10GD							
C23	1000		13M320EA022C	EF-001	MPT-1000				5GC-D1	
C24	1000		R-1449	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C25	1000		13M320EA022C	EF-001	MPT-1000				5GC-D1	
C26	1000		R-1449	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	Note 1
C27	1500		1% #XA152Z	BPD-0015	DD-152	BYAJDJD	ED-1500	DC5215	5HK-D15	
C28	22			MPG-SI 22	TCE-22	C10Q22C	TCO-22		STCC-Q22	
C29	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C30	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C31	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C32	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C33	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C34	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C35	4.7		R-1446	MPG-SI 4.7	TCE-4.7	C10Y4TC	TCO-4.7	ET-5547	STCCB-Y4T	
C36	.047	200	R-1462	BPD-05	DF-503	CUB5S47		GEM-5147	STM-S47	
C37	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C38	22		N-9049	MPG-SI 22		C10Q22C			STCC-Q22	
C39	1	400	N-1423	P48BF-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C40	1	400	N-1423	P48BF-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C41	3		R-1204	MPG-SI 3	TCE-3	C10Y3C	TCO-3	ET-553		
C42	68		R-7844	MPG-SI 68	TCE-68	C10Q68C	TCO-68		STCC-Q68	
C43	47		R-1445	MPG-SI 47	TCE-47	C10Q47C	TCO-47		STCC-Q47	
C44	8.2		R-1441	MPG-SI 8.2	TCE-8.2	C10Y8SC	TCO-8.2			
C45	10000		N-9062	BPD-01	DD-103	BYAES1	GP-10000	DC511	5HK-S1	
C46	10000		R-1447	BPD-001	DD-103	BYAED1	ED-1000	DC511	5HK-D1	
C47	10000		N-9062	BPD-01	DD-103	BYAES1	GP-10000	DC511	5HK-S1	
C48	10		R-1444	MPG-SI 15	TCE-15	C10Q15C	TCO-15		STCC-Q15	
C49	10000		N-9062	BPD-01	DD-103	BYAES1	GP-10000	DC511	5HK-S1	
C50	10000		N-9062	BPD-01	DD-103	BYAES1	GP-10000	DC511	5HK-S1	
C51	22	400	R-1468	P48BN-22		CUB4P22		GEM-4022	4TM-P22	
C52	323	400	R-1481	BPD-32	DF-203	CUB4S32		GEM-4132	4TM-S32	
C53	22	200	R-1465	P48BN-22		CUB2P22		GEM-2122	2TM-P22	
C54	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C55	.047	200	R-1462	BPD-05	DF-503	CUB2S47		GEM-2147	2TM-S47	
C56	.01	600	R-1463	BPD-03	DD-103	CUB6S1		GEM-611	6TM-S1	
C57	.047	400	R-1463	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C58	22	400	R-1468	P48BN-22		CUB4P22		GEM-4022	4TM-P22	
C59	22	400	R-1468	P48BN-22		CUB4P22		GEM-4022	4TM-P22	
C60	.047	600	R-1464	BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C61	.0033	600	R-1460	BPD-0033	DS-332	CUB6D33		GEM-6333	6TM-D33	
C62	.047	400	R-1463	BPD-05	DF-503	CUB4S47		GEM-6147	4TM-S47	
C63	22		N-9049	MPG-SI 22	TCE-22	C10Q22C	TCO-22		STCC-Q22	
C64	33		N-9577	MPG-SI 33	TCE-33	C10Q33C	TCO-33	ET-5433	STCC-Q33	
C65	33		N-9577	MPG-SI 33	TCE-33	C10Q33C	TCO-33	ET-5433	STCC-Q33	
C66	68		N-7844	MPG-SI 68	TCE-68	C10Q68C	TCO-68		STCC-Q68	
C67	22	400	R-1468	P48BN-22		CUB4P22		GEM-4122	4TM-S22	
C68	22	200	R-1465	P28BN-22		CUB2P22		GEM-2022	2TM-P22	
C69	270		R-1439	1466-0027		S5WT27			M5-327	
C70	.01	600	R-1450	BPD-03	DD-103	CUB6S1		GEM-611	6TM-S1	
C71	1000			1467-001		5WSD1			M5-31	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP	VOLT	SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C72	5000		N-6272	BPD-.M5	DD-502	BYAED.M5	GP-5000	DC525	5HK-D5	
C73	22	400	R-1468	P48BN-22		CUB4P22		GEM-4022	4TM-P22	
C74	.047	600	R-1464	BPD-05	DF-503	CUB6S47		GEM-6147	BTM-S47	
C75	10000		N-9062	BPD-01	DD-103	BYAES1	GP-10000	DC511	5HK-S1	
C76	1	250	N-1351	P28BN-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C77	.82	3000	N-1424			HVA30B82		DC536e2	30GA-Q82	
C78	.56	2500	N-1446			HVA25B56		DC.56E56	30GA-Q56	
C79	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C80	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C81	1000		R-1447	BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C82	01	500	N-9439	BPD-01		CUD6S1		GEM-611	6TM-S1	

Note 1: Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST ANCE	WATTS	SONORA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1000Ω	1	R-1414	F1-B				Contrast
B	500K			23-61				Volume
C	Switch			KB-1				
R2A	500K	½	R-1413	AB-59	A47-500K-B	QU-133	PTA59L	Vert. Hold
B	Shaft			AK-18	RW-3	TQ	Not Req.	
R3A	5Meg	½	R-1423	AB-BT	A47-5Meg-B	QU-141	PTA56R	Height - Note 1
B	Shaft			AK-18	RW-3	TQ	Not Req.	
R4A	100K	½	R-1458	AB-60	A47-100K-B	QU-128	PTA51L	Brightness
B	Shaft			AK-18	RW-3	TQ	Not Req.	
R5	1000Ω	½	R-1410		39-1000		FL-1.5K	Vert. Linearity (Wire-wound)
R6	500Ω	2	R-1411		39-500		FL-.500	Buzz (Wire-wound)

Note 1: Part #R-1423 may be 5Meg in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SONORA PART No.	IRC PART No.	
R7	470K			BTS-470K	
R8	470K			BTS-470K	
R9	680K			BTS-680K	
R10	10K			BTS-10K	
R11	3300Ω			BTS-3300	
R12	3900Ω			BTS-3900	
R13	1000Ω			BTS-1000	
R14	47K			BTS-47K	
R15	330K			BTS-330K	
R16	3900Ω			BTS-3900	
R17	10K			BTS-10K	
R18	150Ω			BTS-150	
R19	47Ω			BTS-47	
R20	1000Ω			BTS-1000	
R21	150Ω			BTS-150	
R22	47Ω			BTS-47	
R23	1000Ω			BTS-1000	
R24	470Ω			BTS-470	
R25	180Ω			BTS-180	
R26	1Meg			BTS-1Meg	
R27	6800Ω			BTS-6800	
R28	1.2Meg			BTS-1.2Meg	
R29	1Meg			BTS-1Meg	
R30	100K			BTS-100K	
R31	2300Ω	2		BTS-2300	
R32	56K			BTS-56K	
R33	3700Ω			BTS-3700	
R34	56K			BTS-56K	
R35	4700Ω			BTS-4700	
R36	680Ω			BTS-680	
R37	330K			BTS-330K	
R38	47K			BTS-47K	
R39	4700Ω			BTS-4700	
R40	330Ω	1		BTA-330	
R41	150Ω			BTS-150	
R42	680K			BTS-680K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SONORA PART No.	IRC PART No.	
R43	22K			BTS-22K	
R44	560K			BTS-560K	
R45	4700Ω			BTS-4700	
R46	27K			BTS-27K	
R47	330K			BTS-330K	
R48	1Meg			BTS-1Meg	
R49	2.2Meg			BTS-2.2Meg	
R50	390K			BTS-390K	
R51	330K			BTS-330K	
R52	47Ω			BTS-47	
R53	330Ω			BTS-330	
R54	6200Ω			BTS-6200	
R55	2200Ω			BTS-2200	
R56	680Ω			BTS-680	
R57	180Ω			BTS-180	
R58	230Ω			BTS-230	
R59	4700Ω			BTS-4700	
R60	560K				
R61	2.7Meg				
R62	68Ω				
R63	150K				
R64	100K				
R65	150K				
R66	6200Ω				
R67	100K				
R68	47K				
R69	39K	1			
R70	10K				
R71	150K			BTS-150K	
R72	47Ω			BTS-47	
R73	1000Ω	1	N-5358	BTA-1000	
R74	2.7Ω		R-1424	BW1-2.7	
R75	8.5Ω	5.8	R-1529	PW4-10	
R76	10Ω	5		PW5-100	
R77	5.5Ω	5	R-1409	FR-5.5	
R78	220K ±%			BTS-220K ±%	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA								NOTES
		SONORA PART No.	Halldorson PART No.	Merit PART No.	RCA PART No.	Rom TYPE No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Vert. Osc. Trans.	R-1425	B6103 ①	A-3003-1	20Y11 ①	V40S ①	A-8125 ①	26A03 ①	A-91X ①		
T2	Horiz. Output Trans.	R-1419					HO-2651				
T3	Horiz. Output Trans.	R-1418	Z1900 ②	A-2822		V31L ②	A-8471 ②	26S71			
T4A	Yoke(70°)Horiz.(21MH)	R-1421	DF605 ② ③	MDF-73 ③	22ED1 ② ③	V70Y20 ②/43	GY-1IA ②	Y-30 ② ③	Y-19 ④ YC1		
B	Yoke(90°)Horiz.(6MH)	R-1404 ⑤	?	?	?	⑥ ②	?	⑤	⑤	⑤	

1 Drill new mounting hole(s).
② Use 61o1 turns ratio.
③ Connect blue lead to plate. Remove green and black lead of yoke from ground and connect it to green lead of transformer. Connect red lead of transformer to B+ and green lead of yoke. Disconnect grounded side of capacitor C68 and connect it to green and black lead of yoke.
④ Connect blue lead to plate. Remove green and black lead of yoke from ground and connect it to black lead of transformer. Connect red lead of transformer to B+ and to green lead of yoke. Disconnect grounded side of capacitor C67 and connect it to green and black lead of yoke.
⑤ Yoke rear cover and centering device.
⑥ Connect horiz. network across yoke terminals #3 and #7. Use original if necessary.
⑦ Use original rear cover and centering device.
⑧ Remove capacitor from terminals #1 and #2.
† This part may be superseded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	9					5		
	7					3		
	5					1		
	3							
	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONORA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	2000Ω	3-4Ω	R-1419	21H01 ①	A-3025 ①	A-3332 ①	26S58	S-12X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONORA PART No.	QUAM PART No.	
SPL	4"	PM	3-4Ω	R-1528	4A07	

COILS (RF-IF)

ITEM No.	USE	SONORA PART No.	NOTES
L1	Ant. Coils	51T-413	
L2	Ant. Trap Coil	51T-416	
L3	Ant. Trap Coil	51T-418	
L4A	Ant., RF, Mixer Grid, Osc. Coils	51M-303B	Channel 3
B	Ant., RF, Mixer Grid, Osc. Coils	51M-303D	Channel 5
C	Ant., RF, Mixer Grid, Osc. Coils	51M-304B	Channel 4
D	Ant., RF, Mixer Grid, Osc. Coils	51M-305B	Channel 6
E	Ant., RF, Mixer Grid, Osc. Coils	51M-306B	Channel 8
F	Ant., RF, Mixer Grid, Osc. Coils	51M-307B	Channel 7

ITEM No.	USE	SONORA PART No.	NOTES
L4G	Ant., RF, Mixer Grid, Osc. Coils	51M-306B	Channel 8
H	Ant., RF, Mixer Grid, Osc. Coils	51M-309B	Channel 9
I	Ant., RF, Mixer Grid, Osc. Coils	51M-310B	Channel 10
J	Ant., RF, Mixer Grid, Osc. Coils	51M-311B	Channel 11
K	Ant., RF, Mixer Grid, Osc. Coils	51M-312B	Channel 12
L	Ant., RF, Mixer Grid, Osc. Coils	51M-313B	Channel 13
L5	Mixer Plate Coil	TBM-013	

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SONORA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L6A	1st Video IF	R-1423			6231	
B	4L 24MC Trap					Includes 22MMF Cap. 25 Microhenries; Wound on 47000 Resistor - Note 1
L7	RF Choke		19-8032*			
L8	2nd Video IF	R-1144	17-1534	TV-120	6234	
L9	3rd Video IF	R-1144	17-1534	TV-120	6234	
L10	4th Video IF	R-1427	17-1533	TV-120	6219	
L11	Tweet Filter Coil	R-1429				11.7 Microhenries
L12	Series Peaking Coil	R-1470	19-3303	TV-181	6177	88 Microhenries
L13	Series Peaking Coil	R-1140	19-3300A			294 Microhenries; Wound on 82000 Resistor.
L14	4.5MC Trap	M-9011	20-1004	TV-181	1470	
L15	Shunt Peaking Coil	R-1471	19-4400*		6234	380 Microhenries; Wound on 15000 Resistor.
L16	1st Sound IF	R-1525	17-1400	TV-181	1469	
L17	2nd Sound IF	R-1420				Tapped @ 4Ω and 1.4Ω
L18	Quadrature Coil	R-1407	20-1006		1480	
L19	3rd Choke		19-3305			1.6 Microhenries - Note 1
L20	Pix Choke	M-9026	19-1001		4804	1.3 Microhenries
L21	Pix Choke	N-1473	19-1001		4804	1.6 Microhenries

Note 1: Not used in some versions.
* Parallel with 4700Ω resistor.
+ Parallel with 6200Ω resistor.
+ Parallel with 1500Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI	SEC	SONORA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Rom PART No.	Thordarson PART No.	
L22	75Ω		R-1408						HB-7	Tap @ 55Ω
L23	46Ω		R-1405						HB-8	Horiz. Hold Horiz. Phase

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D C RESISTANCE	INDUCTANCE @ CURRENT 1000 ~Cps	SONORA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L24	270A	15Ω	1 HY	R-1408	C5037	C-2896	C-2328	20C46 ①	C-17X

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SONORA PART No.	REPLACEMENT DATA	
K1	Sync-Coupler	10000MMF, 25MMF, 2700MMF, 10K, 330K, 3. 22Meg	R-1439	Aerovox Centralab Sprague	PA-531 PC-380 ET-1
K3	Vertical Integrator	4700MMF, 4700MMF, 10K, 22K	R-1468	Aerovox Centralab Sprague	PA-383-2 PC-406 Y-6

SONORA MODELS 518, 523, 527, 529, 530, 533, 558, 587, 588

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA						
	CURRENT (Measured)	SONORA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.
M1	.270A	R-1422 ①	1023A ①	1N1007 ②	RS350SL ①	6S350 ①	6QA2 ①	350A ①

① Selenium type.
② Germanium type.

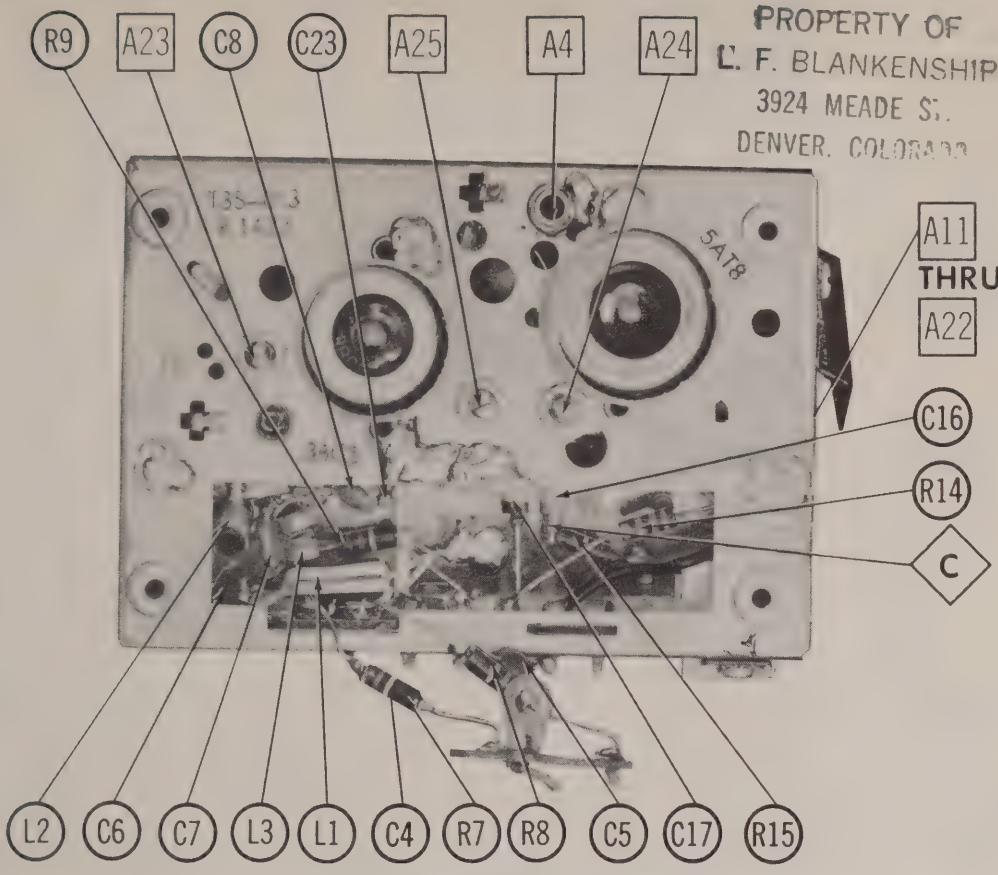
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		SONORA PART No.	SYLVANIA PART No.	
M2	1N64	1N64	1N60	Video Det. (Pigtail)

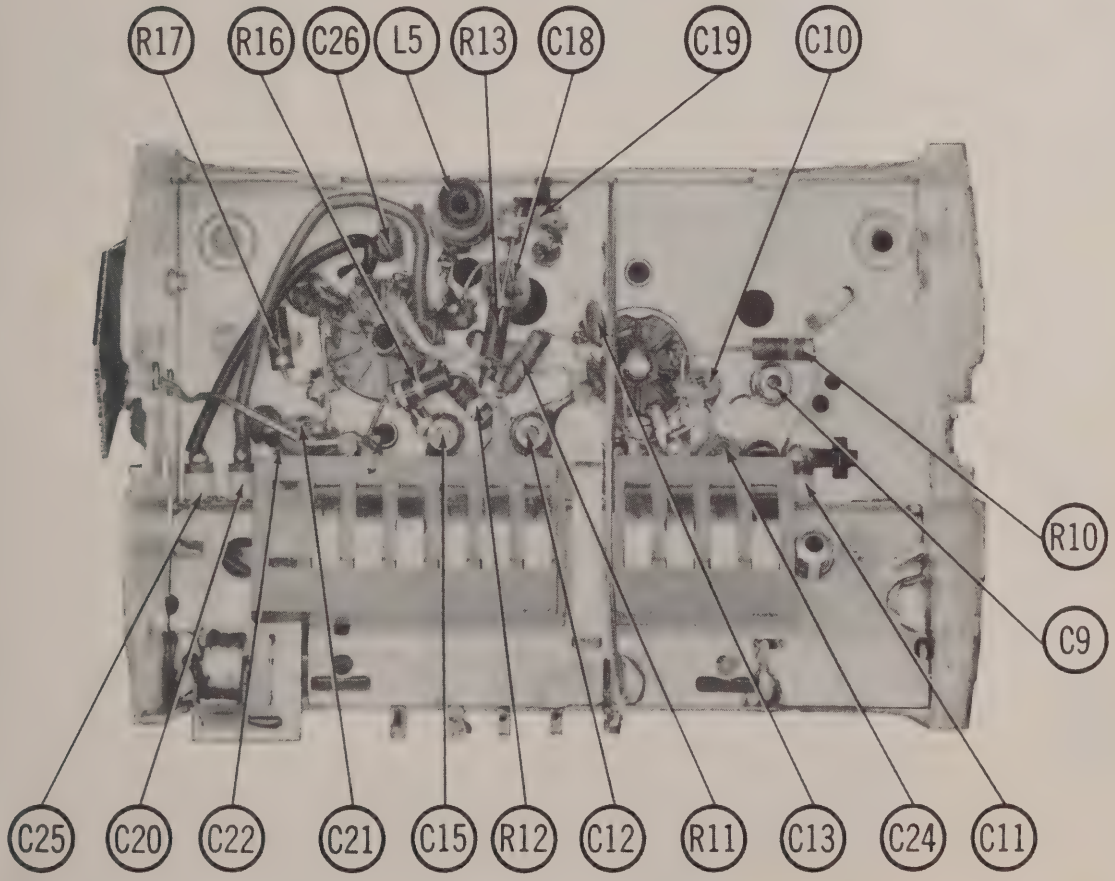
MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M3	Tuner	R-1423	VHF
M4	Centering Device	R-1404	Includes Yoke Cover.
M5	Ion Trap	R-1426	
	Safety Glass	R-1491	Model 518.
	Safety Glass	R-1613	Model 523.
	Mask	R-1556	Model 518.
	Mask	R-1608	Model 523.
	Knob	R-1517	Channel Selector.
	Knob	R-1518	On-Off Volume.
	Knob	R-1519	Contrast
	Knob	R-1520	Fine Tuning.
	Cabinet	#518	Model 518.
	Cabinet	#523	Model 523.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW

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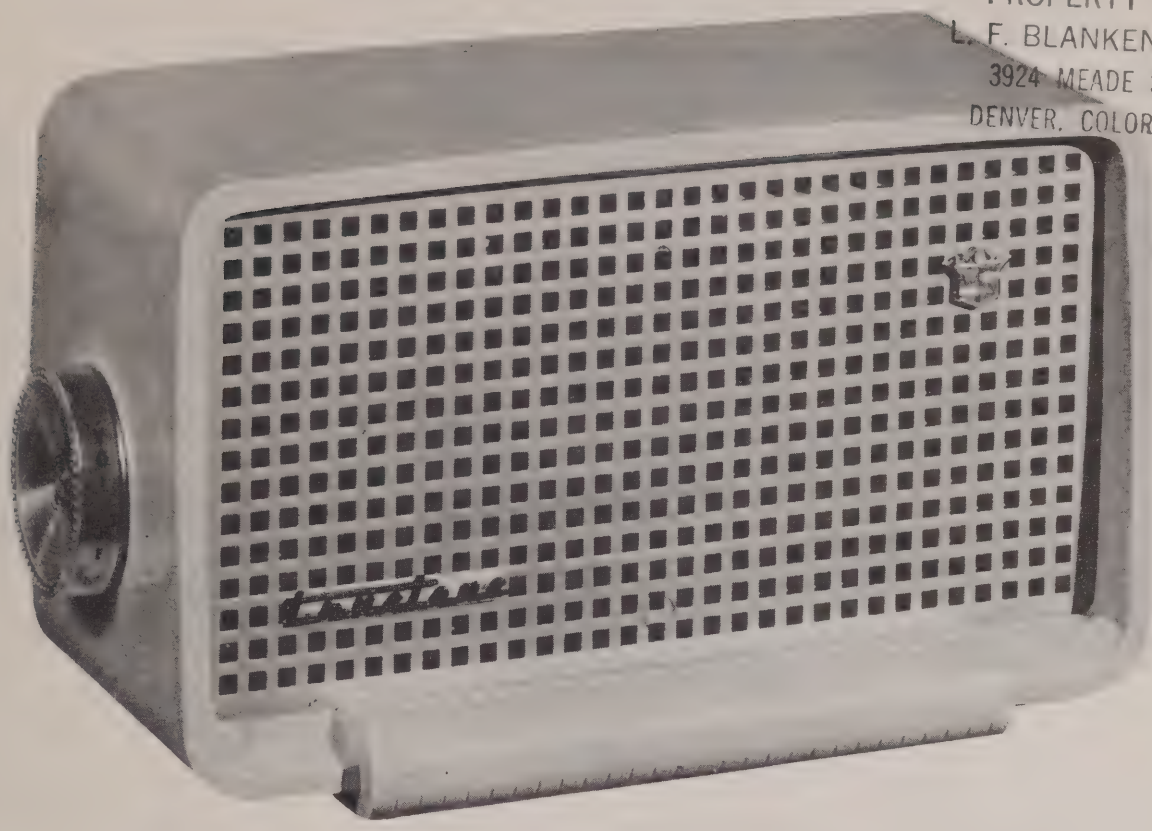
TRUETONE MODELS
D2786A, D2787A



TRUETONE MODELS
D2786A, D2787A

TRADE NAME	Truetone D2786A, D2787A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Six)	Types 12BA6 RF Amplifier, 12BE6 Converter, 12BA6 IF Amplifier, 12AT6 Det.-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-DC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"	A7	Adjust for maximum output while rocking tuning gang.

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BA6	
V2	Converter	12BE6	
V3	IF Amplifier	12BA6	
V4	Det.-AVC-AF Amp.	12AT6	
V5	Output	35C5	
V6	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	150	150-119	PRS150V4040	BBRD4415	TCD48	TDLD-7	FMD-1540	TVA-2445
B	40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	300	500		SI300	D6-301	5R5T3	GP-300	MCB241	MS-33	Note 1
C3	.05	200	152-104	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C4	.05	200	152-104	BPD-05	DF-503	CUB2S5		PT415	2TM-S5	
C5	300	500		SI300	D6-301	5R5T3	GP-300	MCB241	MS-33	Note 1
C6	.01	600		BPD-01	D6-103	CUB6S1	GP-10000	PT611	6TM-S1	Note 2
C7	10000		158-102	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C8	10000		158-102	BPD-01	DD-103	K082	ED-01	DC511	5HK-S1	
C9	.05	400	152-109	BPD-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.1	400	152-108	P488N-1	DF-104	CUB4P1		PT401	4TM-P1	

Note 1. Some versions may use 270MMF in this application (Part #156-101).
Note 2. Some versions may use .002MFD in this application (Part #152-107).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	1/2	120-120	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	

RESISTORS

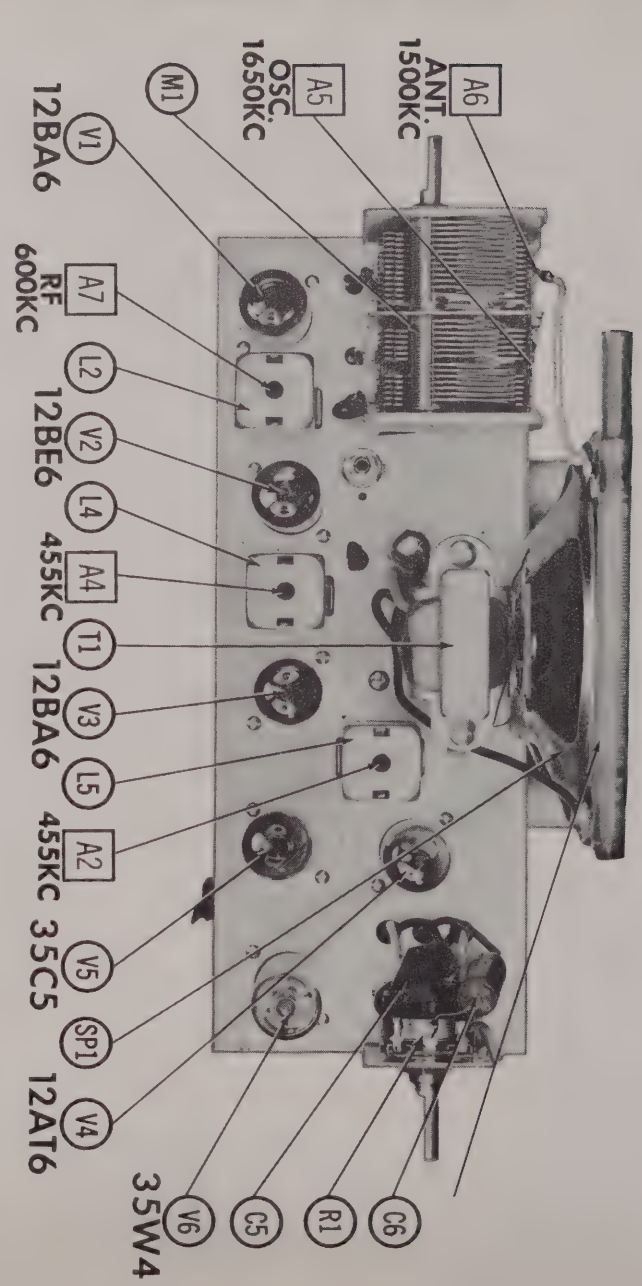
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R2	2.2Meg		180-107	BTS-2.2Meg	
R3	47Ω		180-103	BTS-47	
R4	20K 5%			BTS-22K 5%	
R5	390Ω			BTS-390	Note 1
R6	2.2Meg		180-107	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	TRUETONE PART No.	IRC PART No.	
R7	1800Ω		180-159	BTS-1800	
R8	5.6Meg			BTS-5.6Meg	Note 2
R9	150Ω		180-111	BTS-150	
R10	10K		180-160	BTS-10K	
R11	1200Ω	1		BTA-1200	Note 3

Note 1. Some versions use 470Ω in this application (part #180-156).
Note 2. Some versions use 10Meg in this application (part #180-123).
Note 3. Some versions use 1500Ω, 1W in this application (part #180-157).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3.1Ω	Part of Spkr.	Z1103①	A-3031 ①	A-3336 ①	24S50A ①	S-16X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.		
SP1	4"	PM	3.1Ω	175-117	4A07		

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	.4Ω		132-113				
L2	RF Coil	112Ω	10Ω *	130-113				* Tapped @ 6.8Ω
L3	Osc. Coil	1.2Ω	10.5Ω	136-117			69-OSC ■	■ Drill new mtg. hole
L4	Input IF	17Ω	17Ω	130-102	16-6758	BC-352	12-C1	
L5	Output IF	8Ω	8Ω	130-107	16-6758	BC-353	12-C2	

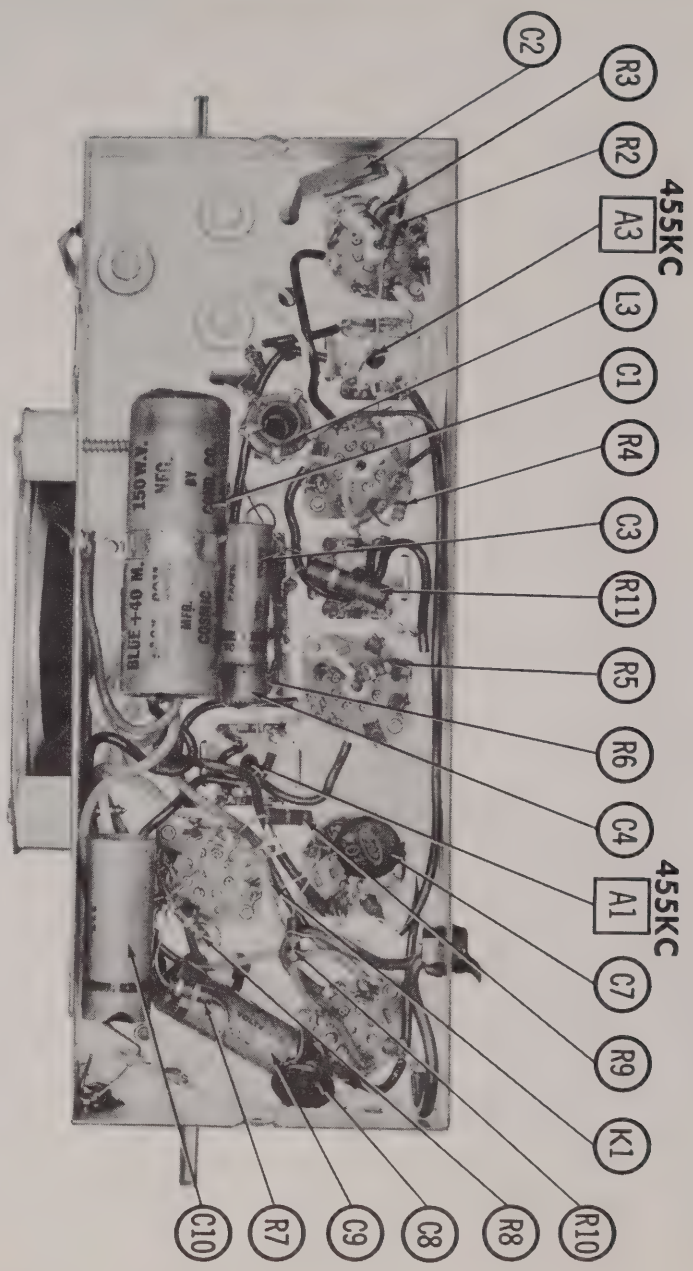
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Audio Couplate	250K, 500K, 5000MMF, 250MMF	106-109	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-112-2 PC-71 112TM2 1406-02 T-4

MISCELLANEOUS

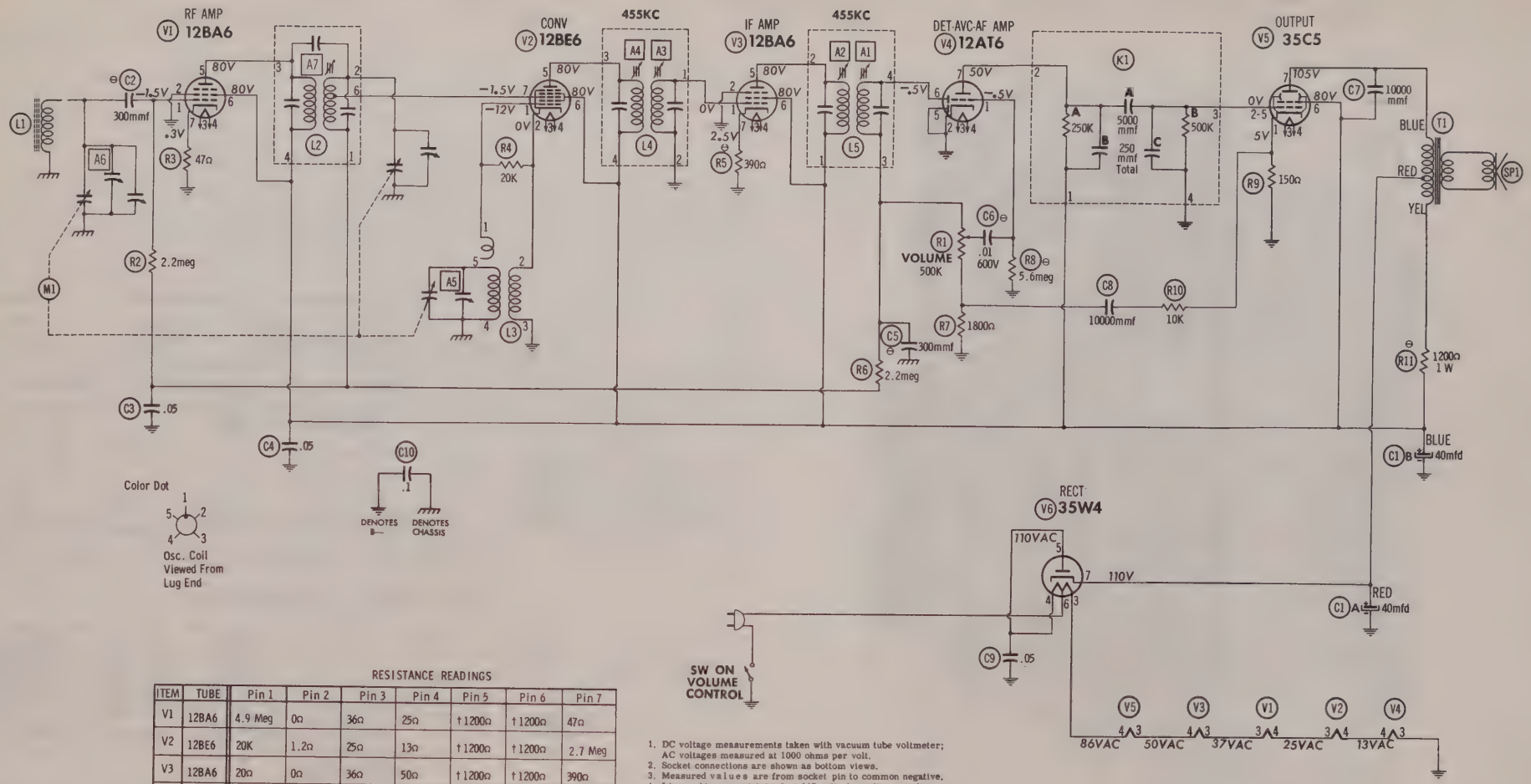
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M1	Tuning Cap. Cabinet Knob	160-111 212-106 220-124	3 Gang (32-540MMF, 7-210MMF, 18-130MMF) Specify color (Specify Color)

CHASSIS—BOTTOM VIEW



TRUETONE
MODEL D2786A

TRUETONE
MODEL D2786A



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BA6	4.9 Meg	0Ω	36Ω	25Ω	†1200Ω	†1200Ω	47Ω
V2	12BE6	20K	1.2Ω	25Ω	13Ω	†1200Ω	†1200Ω	2.7 Meg
V3	12BA6	20Ω	0Ω	36Ω	50Ω	†1200Ω	†1200Ω	390Ω
V4	12AT6	5.6Meg	0Ω	0Ω	13Ω	0Ω	500K	†250K
V5	35C5	150Ω	500K	50Ω	85Ω	500K	†1200Ω	†260Ω
V6	35W4	TP	TP	85Ω	105Ω	105Ω	115Ω	80K

† MEASURED FROM PIN 7 OF V6.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

TRUETONE MODELS 2D1734A, B, C, 2D1735A, B, C, 2D1736A, B, 2D2734A, B, C

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TRUETONE MODELS 2D1734A, B, C, 2D1735A, B, C, 2D1736A, B, 2D2734A, B, C

TRUETONE MODEL 2D1735A

TRADE NAME	Truetone Models 2D1734A, B, C, 2D1735A, B, C, 2D1736A, B, 2D2734A, B, C
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 195 Watts, 1.74 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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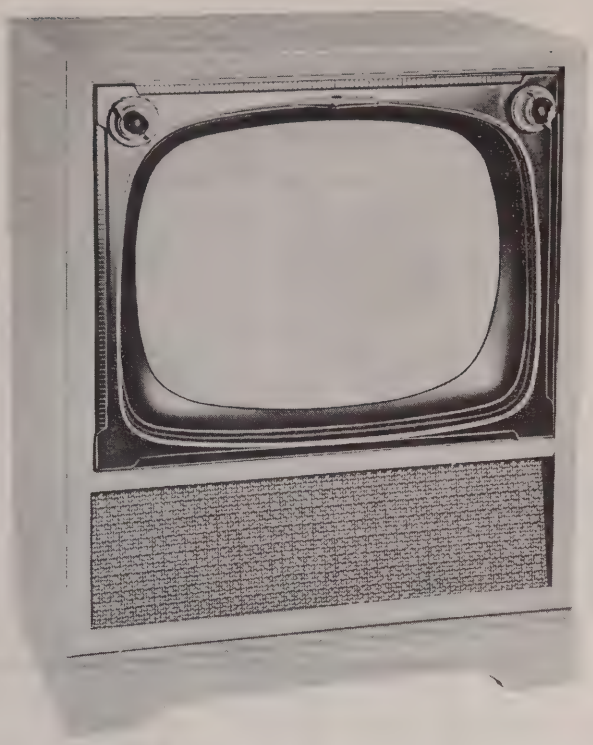

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type control knobs.
2. Remove 6 wood screws. Remove rear cover.
3. Loosen 4 wood screws holding 2 antenna terminal boards. Remove terminal boards.
4. Remove wood screw holding side chassis brace.
5. Remove 4 speaker wires.
6. Remove 6 speed nuts. Remove 2 speakers.
7. Remove 4 metal screws holding chassis to rear of cabinet.
8. Remove chassis.

MODEL

2D1735A

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SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

PICTURE TUBE SAFETY GLASS CLEANING

Remove nameplate by pulling outward. Remove 2 metal screws holding retainer. Remove safety glass.

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

FOCUS

Adjust ion trap for best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Turn the horizontal hold fully clockwise and adjust the horizontal frequency slug (B1) until the picture is just about to tear out of sync at the top. The picture should then be in good sync with the horizontal hold at center of its rotation. If not, continue to turn the slug until it starts to lose sync in the other direction.

SOUND IF DETECTOR BUZZ ADJUSTMENT

Adjust the buzz control for maximum volume and MINIMUM buzz.

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

TRUETONE MODELS 2D1734A, B, C, 2D1735A, B, C, 2D1736A, B, 2D2734A, B, C

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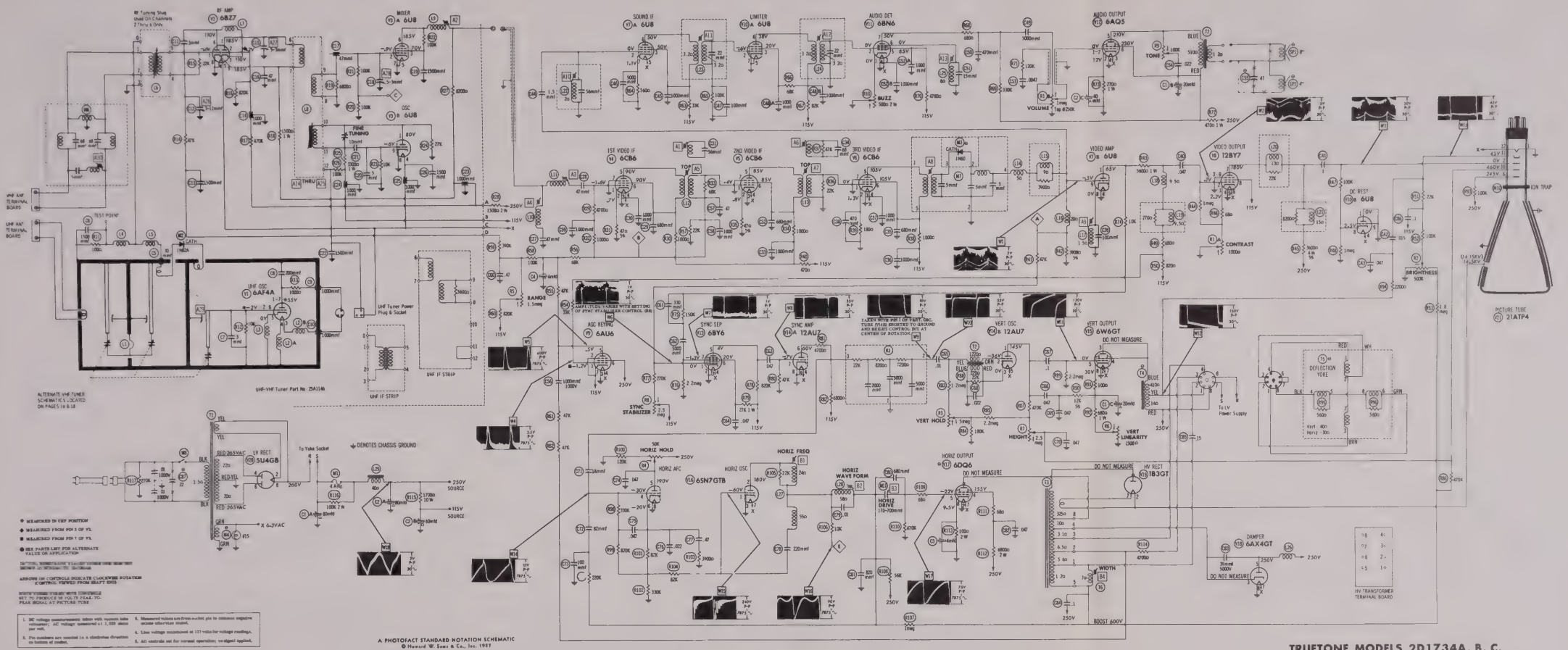

● MEASURED IN VERT POSITION

◆ MEASURED FROM PIN 9 OF Y1

■ MEASURED FROM PIN 7 OF Y1

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

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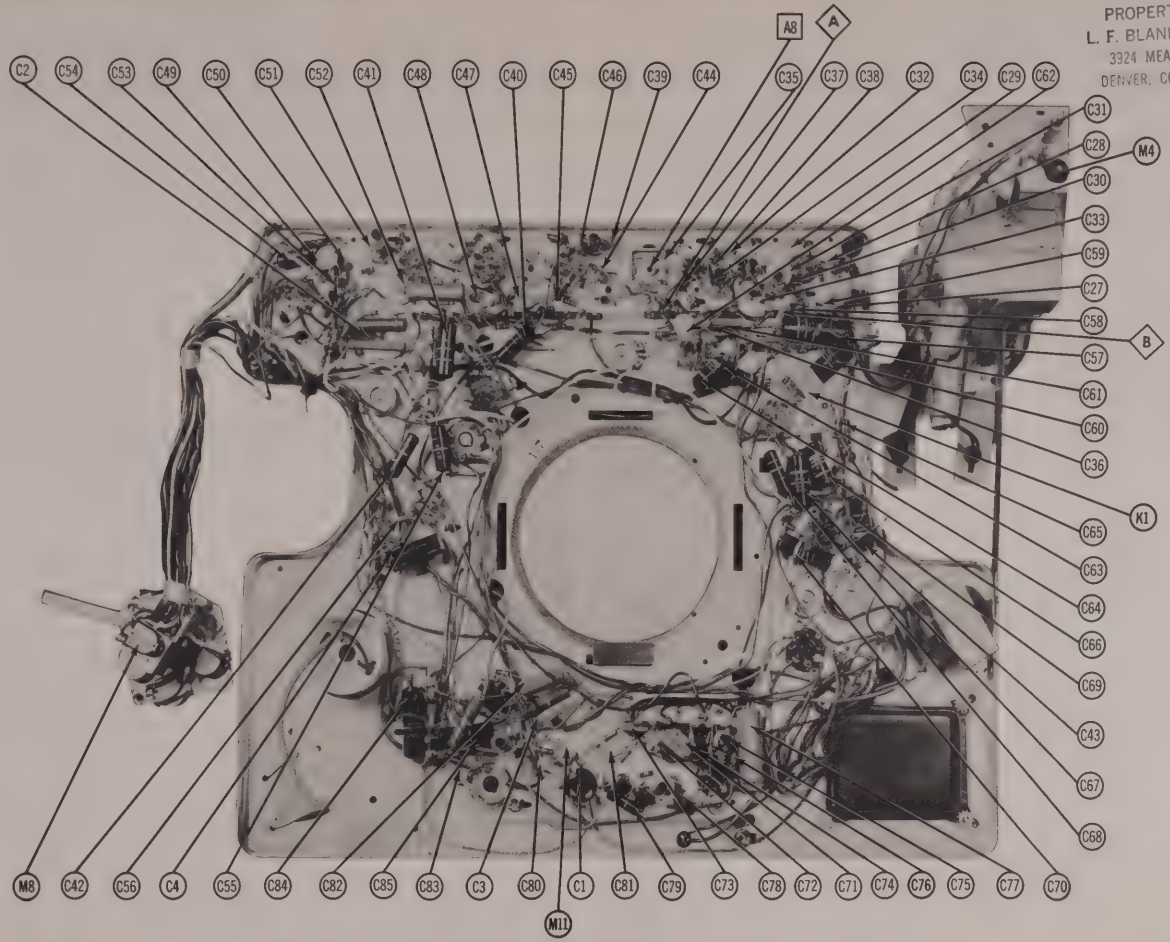
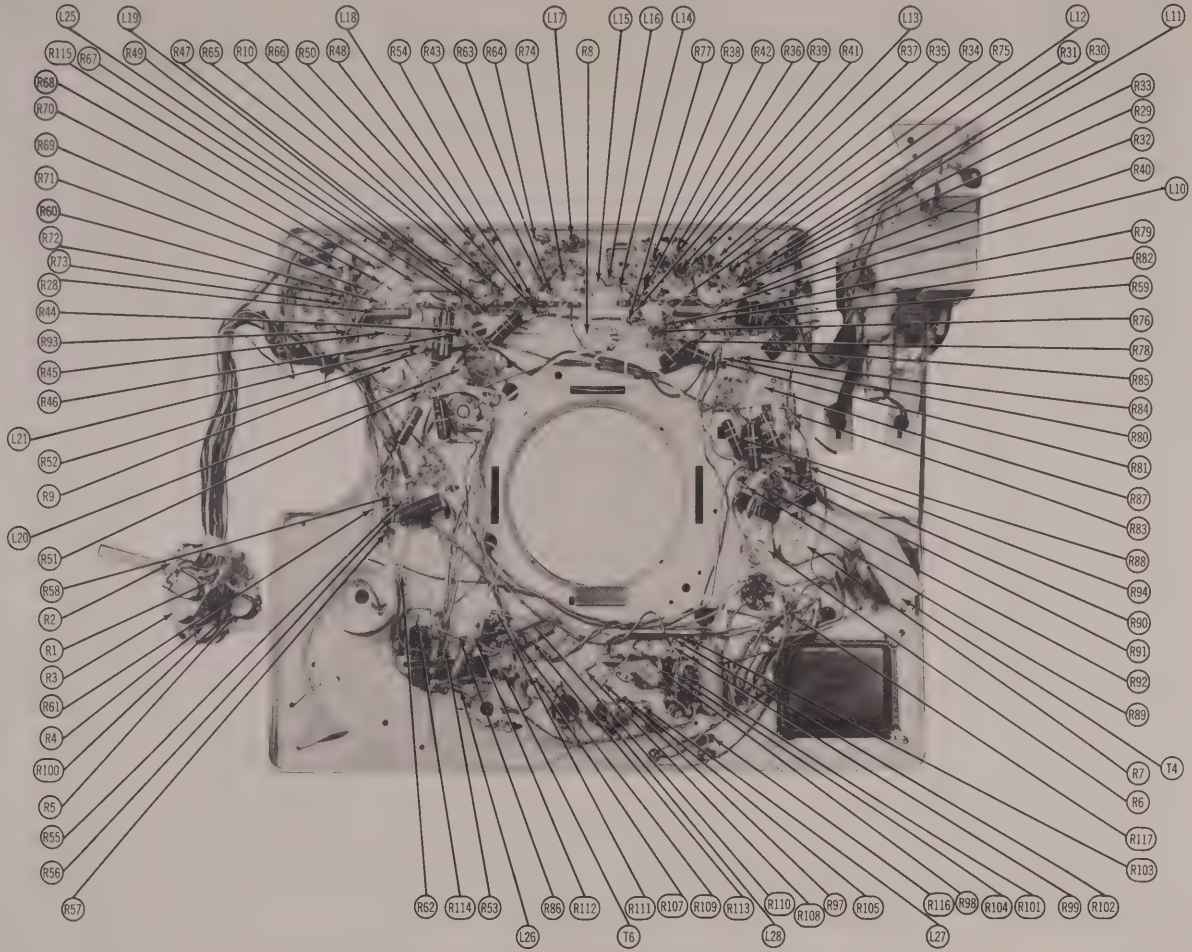


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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TUBE PLACEMENT CHART

TUBE FAILURE CHECK CHART

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - Fuse (M1), V20

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, Diode (M3), V9
No pic, no sound, has snow - V1 (UHF), V2, V3, V4
No pic, has sound, has raster - V7, V8, V10, V21
Has pic, no sound - V7, V10, V11, V12
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V13, V14
No horiz. sync - V13, V14, V16
No vert. or horiz. sync - V13, V14

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V21
No vertical deflection - V14, V15
Poor vert. linearity or foldover - V14, V15
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture - V16, V17, V18, V20
Vert. off freq. - V13, V14
Horiz. off freq. - V13, V14, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be taped and kept away from the chassis.

VIDEO IF ALIGNMENT

When aligning receivers employing tuner #25A1147 (Neutrode); connect the sweep generator with very short leads through 1000MMF disc ceramic to pin 9 (grid, accessible thru a hole located between the two tuner tubes) of the 6CG8 (mixer) tube. Low side to chassis.
When aligning other receiver, connect the high side of the generator to an ungrounded tube shield floating over the converter tube. Low side to chassis.
For all receivers, connect the negative lead of a 1.5 volt bias supply to Ⓑ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	See instructions above.		44MC (10MC Swp)	47.25MC	Any non-interfering channel.	Vert. amp. thru detector (Fig. 1) to pin 5 (Plate) of 6CB6 (V4). Low side to chassis.	A1	Adjust to place marker in trap notch as shown in Fig. 2.
2.	"	"	"	41.25MC 45.75MC	"	"	A2, A3, A4	Adjust A2 & A3 to shape top of response curve as in Fig. 2. Adjust A4 to correctly place 41.25MC marker at 40% as in Fig. 2. The 45.75MC marker must be correctly positioned or later adjustments will be incorrect. After desired response curve is obtained, do not change these adjustments.
3.	"	"	Not Used.	42.8MC (400∿ 30% AM Mod.)	"	Vert. amp. thru 10K to point Ⓐ. Low side to chassis.	A5	Increase bias to -4.5 volts. Connect VTVM between point A and chassis and adjust generator output to produce -2 volts DC on meter. Remove VTVM. Adjust for maximum indication on scope.
4.	"	"	"	41.25MC	"	"	A6	Adjust for MINIMUM.
5.	"	"	"	45.3MC	"	"	A7	Adjust for maximum indication on scope.
6.	"	"	"	44.0MC	"	"	A8	"
7.	"	"	44MC (10MC Swp)	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response curve similar to Fig. 3. A8 controls the symmetry of top of curve. A7 will position 45.75MC marker. A5 is used to position 42.4MC marker. Retouch these adjustments only if necessary.

4.5MC TRAP ALIGNMENT

Connect the high side of the 4.5MC signal generator to point Ⓐ. Low side to chassis. Connect the AC probe of the VTVM to the cathode (pin 11) of the picture tube. Adjust A9 for MINIMUM deflection.
This adjustment may also be made by observing a picture from a station and adjusting A9 for MINIMUM 4.5MC beat interference in the picture.

SOUND IF ALIGNMENT

1. Tune in a TV station and reduce the signal with an attenuator between the antenna and the antenna terminals until a hiss accompanies the sound.
2. Adjust A10, A11, A12, A13 and the buzz control (R10) for maximum undistorted sound and MINIMUM buzz.
3. If hiss disappears during alignment, further reduce signal strength until the hiss returns.

VHF OSCILLATOR ALIGNMENT

Leave 4.5 volt bias connected as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 47K to point Ⓐ. Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A15	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A16	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A17	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A18	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A19	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A20	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A21	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A22	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A23	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A24	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A25	

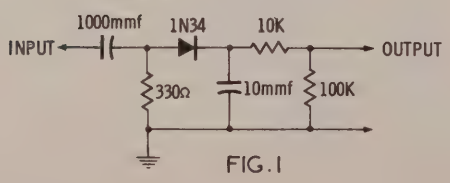


FIG. 1

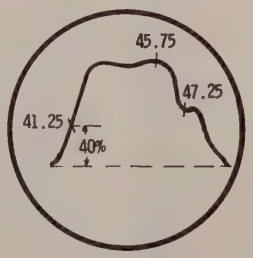


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT FOR TUNERS #25A1144 and #25A1146

Connect the negative lead of a 3 volt bias supply to AGC terminal (terminal "D" on tuner #25A1146 or terminal "A" on tuner #25A1144) on tuner terminal strip. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10K to point Ⓒ. Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 5 with markers above 90%.
10.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 5. If markers fall below 70% on any channel, make compromise adjustments of A26, A27 and A28 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

UHF OSCILLATOR ALIGNMENT

Adjust UHF oscillator trimmer (A29) for best uniform tracking over UHF band. Note: This does not necessarily mean that each UHF channel will appear at indicated number on knob.

INTERFERENCE TRAP ADJUSTMENT

Antenna trap (A30) should be adjusted for MINIMUM interference in the picture while receiver is tuned to channel where interference occurs.

VHF RF AND MIXER ALIGNMENT FOR TUNER #25A1147

Connect the negative lead of a 2.5 volt bias supply through 10K to the AGC terminal of tuner. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193.25MC 197.75MC	10	Vert. amp. thru 10K to point Ⓓ. Low side to chassis.	A31, A32	Adjust for maximum response similar to Fig. 5.
12.	"	"	"	"	"	"	A33	Adjust A33 (RF coil on channel 10 tuner strip) by expanding or compressing coil turns for maximum height between carriers. Retouch A31 and A32 for symmetrical response.
13.	"	"	"	"	"	Vert. amp. thru detector (Fig. 1) to pin 5 (plate) of 6CB6 (V4). Low side to chassis.	A34	Connect negative lead of 1.5 volt bias supply to point Ⓑ. Positive to chassis. Adjust A34 for MINIMUM response curve amplitude. Remove bias and test equipment.

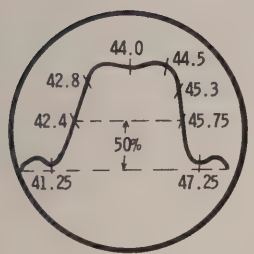


FIG. 3

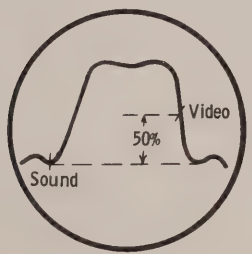


FIG. 4

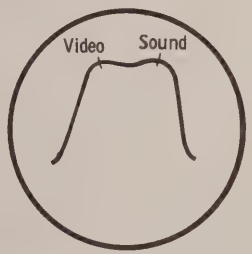


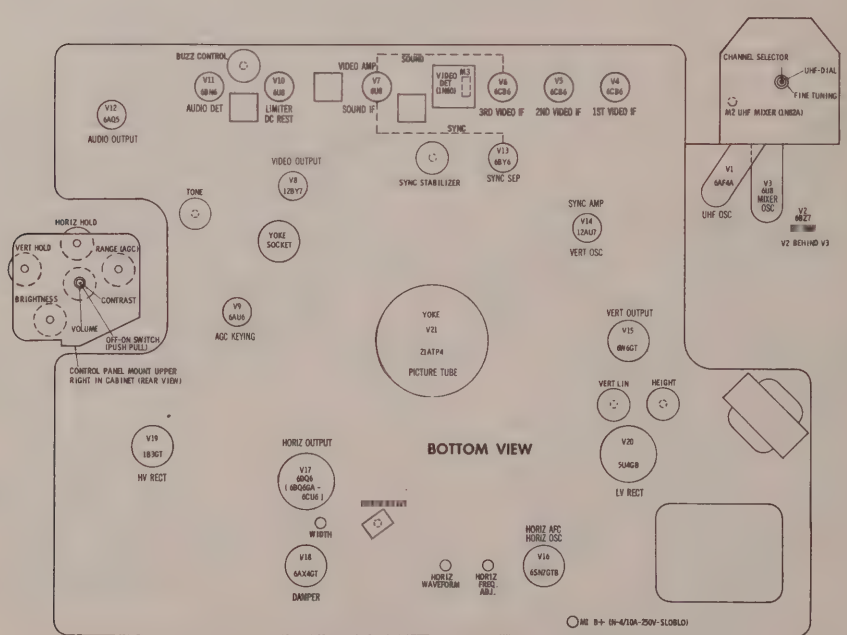
FIG. 5

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AF4	† *6000Ω	10K	.1Ω	0Ω	.1Ω	10K	† *6000Ω		
V2	6BZ7	† 3000Ω	290K	INF	0Ω	.1Ω	INF	570K	0Ω	† 3000Ω
V3	6U8	† 5000Ω	200K	† 100K	.1Ω	0Ω	† 9700Ω	0Ω	0Ω	10K
V4	6CB6	27K	47Ω	0Ω	.1Ω	† 3200Ω	† 3200Ω	0Ω		
V5	6CB6	22K	47Ω	0Ω	.1Ω	† 3200Ω	† 3200Ω	0Ω		
V6	6CB6	.1Ω	180Ω	0Ω	.1Ω	† 2700Ω	† 2700Ω	0Ω		
V7	6U8	† 8800Ω	2Ω	† 35K	0Ω	.1Ω	† 35K	560Ω	1.5Ω	3900Ω
V8	12BY7	● 85Ω	1Meg	0Ω	0Ω	0Ω	.1Ω	† 3600Ω	† 1700Ω	0Ω
V9	6AU6	† 35K	† 1700Ω	0Ω	.1Ω	140K	† 40Ω	† 1700Ω		
V10	6U8	0Ω	100K	† 150K	.1Ω	0Ω	† 82K	0Ω	1Meg	0Ω
V11	6BN6	● 2Ω	3.2Ω	.1Ω	0Ω	† 6500Ω	6Ω	† 330K		
V12	6AQ5	1Meg	270Ω	.1Ω	0Ω	† 1000Ω	† 510Ω	1Meg		
V13	6BY6	30K	0Ω	0Ω	.1Ω	† 820K	† 29K	2.2Meg		
V14	12AU7	● ‡ 1.3Meg	● 1.8Meg	220Ω	.1Ω	.1Ω	† 13K	47K	0Ω	0Ω
V15	6W6GT	TP	0Ω	† 450Ω	† 450Ω	2.2Meg	TP	.1Ω	● 1400Ω	
V16	6SN7GTB	410K	† 56K	0Ω	1.5Meg	● † 400Ω	410K	.1Ω	0Ω	
V17	6DQ6	TP	0Ω	NC	† 6800Ω	470K	TP	.1Ω	100Ω	TOP CAP ‡ 10Ω
V18	6AX4GT	NC	NC	650K	NC	† 40Ω	NC	.1Ω	0Ω	
V19	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡ 335Ω
V20	5U4GB	NC	90K	NC	22Ω	NC	20Ω	NC	90K	
V21	21ATP4	0Ω	1.1Meg	Pin 6 † 100K	Pin 10 ‡ 470K	Pin 11 ● 360K	Pin 12 1Ω			

● THIS READING WILL VARY, CONTROL SET FOR NORMAL OPERATION.
‡ MEASURED FROM PIN 3 OF V18.
† MEASURED FROM PIN 8 OF V20.
* MEASURED IN "UHF" POSITION.
TP TIE POINT
NC NO CONNECTION



TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRUETONE MODELS 2D1734A, B, C, 2D1735A, B, C, 2D1736A, B, 2D2734A, B, C

CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	UHF Osc.	6AF4	
V2	RF Amp.	6BZ7	
V3	Mixer Osc	6U8	
V4	1st Video IF Amplifier	6CB6	
V5	2nd Video IF Amplifier	6CB6	
V6	3rd Video IF Amplifier	6CB6	
V7	Video Amp. Sound IF Amp.	6U8	
V8	Video Output	1B3GT	
V9	AGC Keying	6AL6	
V10	Limiter-DC Restorer	6U8	
V11	Audio Det.	6BN6	
V12	Audio Output	6AQ5	
V13	Sync Sep.	6BY6	
V14	Sync Amp. Vert. Osc.	12AU7	
V15	Vert. Output	6W5GT	
V16	Horiz. AFC-Horiz. Osc.	6BN7GTB	
V17	Horiz. Output	6DQ6	Note 1
V18	Damper	6AX4GT	
V19	HV Rectifier	1B3GT	
V20	LV Rectifier	5U4GB	

Note 1: Some versions may use 6CU8 or 6BQ6GA in this application.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	TRUETONE PART No.	CBS PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V21	21ATP4	21ATP4	21ATP4A, 21ATP4	21ATP4A [1] Aluminized 21ATP4 [2] Silver Screen 85% 21ATP4A [3] 21BTP4	

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA							
	CAP	VOLT	TRUETONE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	NOTES
C1A	.80	300	45X438	AFH4-07	DO50 BBH30-50	FP-325 TC-36	TMT-25 TD-10-50	Q-010 MT-0510	8230S*	
B	20	300								
C	20	50								
C2A	.80	300	45X439	AFH3-39-50	BO334 HH50S	FP237.5 TC68		T-180 MT-0550	R3304*	
B	80	300								
C	40	50								
C3	4	50	45X418	PRS150V4	BBH-4-50	TC30	TD-4-50	MMT-0505	TVA-1303	
C4	4	50	45X418	PRS150V4	BBH-4-40	TC30	TD-4-50	MMT-0505	TVA-1303	

* Non catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	TRUETONE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No.	ERIE PART No	MALLORY PART No	SPRAGUE PART No	
C5	30		13M30Q P300D30Q2							
C6	1500		13L5X A152Z	BPD-0015	DD-152	BYAGD15	ED-0015	DC5215	5HK-D15	
C7	3									
C8	200									
C9	1000		13M30E A102Z-01	SF-001	MFT-1000				50JC-D1	
C10	1000		13M30E A102Z-01	SF-001	MFT-1000				50JC-D1	
C11	3		13L RC30H	NPO-S15	TC2-3R3	C10V3C	TCO-3	ZT-503		
C12	3-13		31B901							
C13	1500		13L 5X A152Z	BPD-0015		BYAGD15	ED-0015	DC5215	5HK-D15	
C14	1000		13M 30H 102Z	SF-001	MFT-1000				50JC-D1	
C15	3-3		31B903		829-3		31L5-D	CT565A		
C16	3		13L 5Q479K							
C17	47		13M30U 470K-R							
C18	3-3		31B902		829-3		31L5-D	CT565A		
C19	1500		13L 5X A152Z	BPD-0015	DD-152	BYAGD15	ED-0015	DC5215	5HK-D15	
C20	5		13L 5U A050C							
C21	10		13L 5U 100K							
C22	1500		13L 5X A152Z	BPD-0015	DD-152	BYAGD15	ED-0015	DC5215	5HK-D15	
C23	1000		13M 28H 102Z	SF-001	MFT-1000				50JC-D1	
C24	1000		13M 28H 102Z	SF-001	MFT-1000				50JC-D1	
C25	1000		13M 28H 102Z	SF-001	MFT-1000				50JC-D1	
C26	1500		13L 5X A152Z	BPD-0015	DD-152	BYAGD15	ED-0015	DC5215	5HK-D15	
C27	47			DI-47	D-4-47	LT6Q47	GP-47	UC-5447	5GA-Q47	
C28	47			DI-47	D-4-47	LT6Q47	GP-47	UC-5447	5GA-Q47	
C29	680			BPD-0068	DD-681	BYAGT68	ED-680	UC-5368	5GA-T68	
C30	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C31	56			NPO-S156	TC2-56	C10Q56C	TCO-56			
C32	680			BPD-0068	DD-681	BYAGT68	ED-680	UC-5368	5GA-T68	
C33	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C34	68		82X15	NPO-S168	TC2-68	C10Q68C	TCO-68			
C35	680			BPD-0068	DD-681	BYAUT68	ED-680	UC-5368	5GA-T68	
C36	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C37	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C38	470			BPD-0047	DD-471	BYAUT47	ED-470	UC-5347	5GA-T47	
C39	100			DI-100	D6-101	LT6T1	GP-100	UC-533	5GA-T1	
C40	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C41	.1	400		P48N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C42	.015	600	RCP10M153M	BPD-015	DD-153	CUBSD15	ED-615	GEM-6015	6TM-S15	
C43	.047	600	[illegible]	BPD-05	DF-503	CUBS847		GEM-6147	6TM-S47	
C44	1.5			MPO-41 1.5	TC2-1R5	C10V15C	TCO-1.5	ZT-1515	5TCC5-Y15	
C45	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C46	5000			BPD-005	DD-502	BYAUD5	ED-005	DC525	5HK-D5	
C47	100			DI-100	D6-101	LT6T1	GP-100	UC-533	5GA-T1	
C48	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	(ED-1000) ED-1000	DCD521	5HK-2DN	
B	1000						(ED-1000)			
C49	5000			BPD-005	DD-502	BYAUD5	ED-005	DC525	5HK-D5	
C50	470		80X4	BPD-00047	DD-471	BYAUT47	ED-470	UC-5347	5GA-T47	
C51	118			BPD-000015	DD-150	L10Q	ED-15	UC-5415	5GA-Q15	
C52A	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	(ED-1000) ED-1000	DCD521	5HK-2DN	
B	1000						(ED-1000)			
C53	.0047	400	RCP10M4472M	BPD-0047	DF-472	CUBD447	ED-0047	GEM-4247	4TM-D47	
C54	.023	600	RCP10M6233M	BPD-02	DF-203	CUBS632	ED-03	GEM-6223	6TM-S22	
C55	.47	200	RCP10M2474M	P28N-47		CUBS247		GEM-2047	2TM-247	Note 1
C56	1000	1000	47X759	HVD-15.1000		BYA3D1M		DC3D21	1HK-D1	
C57	.200		RCP10M2474M	P28N-47		CUBS247		GEM-2047	2TM-P47	
C58	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C59	1000			BPD-001	DD-102	BYAED1	ED-1000	DC521	5HK-D1	
C60	.47	200	RCP10M2474M	P28N-47		CUBS247		GEM-2047	2TM-P47	
C61	120		47X709	1469-00033		SBT123			MS-353	
C62	5000			BPD-005	DD-502	BYAUD5	ED-005	DC525	5HK-D5	
C63	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C64	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C65	.01	400		BPD-01	DD-103	CUBS81	ED-01	GEM-41	4TM-S1	
C66	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C67	.1	400		P48N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C68	.023	600		BPD-023	DF-503	CUBS232	ED-03	GEM-2123	2TM-S23	
C69	.047	200	RCP10M2473M	BPD-05	DF-503	CUBS247		GEM-2147	2TM-S47	

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP	VOLT	TRUETONE PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C70	.047	800	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-8147	8TM-S47	
C71	18		RCM20B180K	1469-000018		22R5Q18			MS-418	
C72	82		RCM20B820K	1469-000082		22R5Q82			MS-482	
C73	30			1469-0001		22R301		MC335	MS-31	
C74	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C75	.047	200	RCP10M2473M	BPD-05	DF-503	CUBS247		GEM-2147	2TM-S47	
C76	.022	200	RCP10M2223M	BPD-02	DF-203	CUBS232	ED-03	GEM-2123	2TM-S22	
C77	.47	200	RCP10M2474M	P28N-47		CUBS247		GEM-2047	2TM-247	
C78	220			1469-00022		22R5Y22			MS-322	
C79	.01	400		BPD-01		CUBS81		GEM-411	4TM-S1	
C80	680			BPD-00068	DD-681	BYAGT68	ED-680	UC-5368	5GA-T68	
C81	820		RCM30B82K	1464-00082		18S782			MS-382	
C82	.047	400	RCP10M4473M	BPD-05	DF-503	CUBS847		GEM-4147	4TM-S47	
C83	39	1000	47X756			BYA20G39				
C84	.1	600		P68N-1		DF-104	CUB6P1	GEM-601	6TM-P1	
C85	.15	200	RCP10M2154M	P28N-15			CUBP15	GEM-2015	2TM-P15	
C86	.1	200		P28N-1		DF-104	CUB2P1	GEM-201	2TM-P1	
C87	.22	400		P48N-22			CUB4P22	GEM-4022	4TM-P22	Note 1

Note 1: Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST ANCE	WATTS	TRUETONE PART No	CENTRALAB PART No	CIAROSTAT PART No.	IRC PART No	MALLORY PART No	
R1A	1000Ω		78X27					Contrast
B	1Meg							Volume - Tap ⑨ 250K
R2A	500K		40X416	AB-59	A47-500K-S	Q11-133	U50	Brightness
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
R3A	1. 5Meg	1	40X415	AB-742	A47-2.5Meg-S	Q11-138	U151	Vert. Hold
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
R4A	50K	1	40X414	AB-51	A47-50K-S	Q11-123	U53	Horiz. Hold
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
R5A	1. 5Meg	1	40X415	AB-742	A47-2.5Meg-S	Q11-138	U151	Range
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
R6A	1500Ω	1	40X410	AB-6	A47-1500-S	Q11-109	PTA18Z	Vert. Lin.
B	Shaft			AK-4	FKS-1/4	NQ	Not Req.	
R7A	2. 5Meg	1	40X405	AB-53	A47-2.5Meg-S	Q11-139	TA256L	Height
B	Shaft			AK-4	FKS-1/4	NQ	Not Req.	
R8A	2. 5Meg	1	40X405	AB-53	A47-2.5Meg-S	Q11-139	TA356L	Sync Stab.
B	Shaft			AK-4	FKS-1/4	NQ	Not Req.	
R9A	100K	1	40X407	AB-40	A47-100K-S	Q11-128	TA32L	Tone
B	Shaft			AK-4	FKS-1/4	NQ	Not Req.	
R10	500Ω	2	40X397			DS-500	FL-490	Bass (Wire-wound)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		
	OHMS	WATT	TRUETONE PART No	IRC PART No.	NOTES
R11	100Ω		12TAS100K	BTS-100	
R12	1. 2K		12TAS12K	BTS-1.2K	
R13	1000Ω		31B-563	BTS-1000	
R14	47K		12TAS473M	BTS-47K	
R15	22K		12TAS223K	BTS-22K	
R16	620K		12TAS623K	BTS-620K	
R17	470K		12TAS474K	BTS-470K	
R18	1800Ω	1	12BAS183K	BTA-1800	
R19	6800Ω		12TAS682K	BTS-6800	
R20	100K		12TAS104K	BTS-100K	
R21	100K		12TAS104K	BTS-100K	
R22	100K		12TAS104K	BTS-100K	
R23	10K		12TAS103K	BTS-10K	
R24	27K		12TAS273K	BTS-27K	
R25	3300Ω	1	12BAS333K	BTA-3300	
R26	100K		12TAS104K	BTS-100K	
R27	8300Ω			BTS-8300	
R28	13000Ω	2		BTS-13000	
R29	4700Ω			BTS-4700	
R30	1000Ω		31B-563	BTS-1000	
R31	47Ω 5%			BTS-47 5%	
R32	1000Ω				
R33	68K			BTS-68K	
R34	1000Ω		31B-563	BTS-1000	
R35	470 5%			BTS-47 5%	
R36	22K			BTS-22K	
R37	47K			BTS-47K	
R38	1000Ω			BTS-1000	
R39	18Ω			BTS-180	
R40	470Ω			BTS-470	
R41	47K				
R42	39000 5%			BTA-3900	
R43	5600Ω	1			
R44	1Meg				
R45	33Ω 5%	4	43X331		
R46	68Ω			BTS-68	
R47	100K			BTS-100K	
R48	1Meg			BTS-1Meg	
R49	680Ω			BTS-680	
R50	330Ω			BTS-330	
R51	33K			BTS-33K	
R52	100K			BTS-100K	
R53	1. 5Meg			BTS-1.5Meg	
R54	33K			BTS-33K	
R55	47K			BTS-47K	
R56	68K			BTS-68K	
R57	22K			BTS-22K	
R58	100K			BTS-100K	
R59	330K			BTS-330K	
R60	620K			BTS-620K	
R61	47K			BTS-47K	
R62	47K			BTS-47K	
R63	22K			BTS-22K	
R64	680Ω			BTS-680	

ITEM No.	RATING		REPLACEMENT DATA		
	OHMS	WATT	TRUETONE PART No	IRC PART No.	NOTES
R65	100K			BTS-100K	
R66	68K			BTS-68K	
R67	82K			BTS-82K	
R68	680Ω			BTS-680	
R69	330K			BTS-330K	
R70	4700Ω			BTS-4700	
R71	120K			BTS-120K	
R72	470K	1		BTS-470K	
R73	270Ω	1		BTS-270	
R74	10K			BTS-10K	
R75	150K			BTS-150K	
R76	2. 2Meg			BTS-2. 2Meg	
R77	270K			BTS-270K	
R78	620K			BTS-620K	
R79	27K	1		BTA-27K	
R80	47K			BTS-47K	
R81	4700Ω			BTS-4700	
R82	6800Ω			BTS-6800	
R83	1. 2Meg			BTS-1. 2Meg	
R84	18Ω			BTS-180	
R85	2. 2Meg			BTS-2. 2Meg	
R86	470K			BTS-470K	
R87	470K			BTS-470K	
R88	22K			BTS-22K	
R89	2. 2Meg			BTS-2. 2Meg	
R90	12K 5%			BTS-12K 5%	
R91	100Ω			BTS-100	
R92	680Ω	1		BTS-680	
R93	100K			BTS-100K	
R94	2200Ω			BTS-2200	
R95	560Ω				
R96	330K				
R97	330K				
R98	330K				
R99	820K				
R100	82K				
R101	82K				
R102	330K				
R103	330K				
R104	82K				
R105	22K				
R106	10K				
R107	10K				
R108	56K				
R109	68Ω			BTS-68	
R110	470K			BTS-470K	
R111	68Ω			BTS-68	
R112	6800Ω	2		BTS-6800	
R113	100Ω	2		BTS-100	
R114	4700Ω			BTS-4700	
R115	1700Ω	10	43X344	1.5/4A-1750	
R116	100K	2		BTS-100K	
R117	470K			BTS-470K	

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No	Halldorson PART No.	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117VAC	525VCT	5V	6.3V	31X354-A		P-2630 [1]	P-8332 [2]	23G50 [3]	R-61DC [4]
	60 cy.	@ 74A	@ 2.0A	@ 6.0A						

[1] Parallel & phase 6.3V, 6A filament windings.
[2] Tape 6.3V, 1.5A filament winding.
[3] Parallel & phase & 5V filament windings.
[4] Tape 6.3V, 1.2A filament winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA							
		TRUETONE PART No	Halldorson PART No	Merit PART No TYPE No	RCA PART No	Stancor PART No	Thordarson PART No	Triad PART No
T3	Vert. Osc. Trans.	54X10	B6702	A-3003	209T1 ①	V403	A-8325	28A03	A-97X
T3	Horiz. Output Trans.	53X355	FB419 ②	RY0-38 ②	215T1 ②	RY644 ②	A-8253 *	FLY-16 ②	D-50 ②
			RF800P ③	MWC-1P ③	212R1P ③	20JR16P ③	1	A-8149 ③	WC-12P ③
T4	Vert. Output Trans.	51X173A	21900 ③ ④	A-3823 ③		V303 ③ ④	A-8149 ③	28S72 ③ ④	A-108X ③
		51X173 ②	21900 ③ ④	A-3823 ③		V303 ③ ④	A-8149 ③	28S72 ③ ④	A-108X ③
T5A	Yoke(90°) Horiz(20MH)	9A2388-1B ⑤	DF607 ⑦ ⑨	MDF-92 ⑦ ⑨	235D1 ⑦ ⑨	T90F19/43 ⑦ ⑨	DY-16A ⑦ ⑨	T-16 ⑦ ⑨	Y-41 ⑦ ⑨
B	Vert(34MH)	9A2388 ⑤							
T6	Width Coil (2-9MH)	9A258I	RF800 ⑥	MWC-6	21JR1	20JR16	WC-8	WC-13	WC-12 ⑩

① Drill new mounting hole(s).
② Alternate part number.
③ Use 8 to 1 turns.
④ Connect as auto transformer.
⑤ Cut and tape green lead.
⑥ Includes resistor R95 and R96.
⑦ Use original rear cover and centering device.
⑧ Use original horiz. yoke damping network.
⑨ Take rear cover and centering device.
⑩ Do not use tap.
⑪ Connect to coded red and blue terms.
† This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TRUETONE CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rem Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	8	9	9	9	8	8	9	9
	4	7	7	7	1	1	7	7
	3	7	7	7	1	1	7	7
	2	Note ⑫	Note ⑫	Note ⑫	Note ⑫	Note ⑫	Note ⑫	Note ⑫
	1	3	3	3	3	3	3	3
	5	1	1	1	4	4	1	1
Connect Width Coil Across	1 & 5	Terms #1 & #3 of RF800 Across 3 & 1	MWC-1I Across 3 & 1	212R1 Across 3 & 1	20JR16 Across 3 & 1	6 & 7	WC-18 Across 3 & 1	Red & Blue Terms of WC-12 Across 3 & 1
Special Notes		⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬	⑫ ⑬

⑫ Connect approx. 100-150MMF @ 2KV in series with resistor R114 & connect across horiz. yoke terms #3 & #7.
⑬ Change values of resistor R91 & R92 as necessary to obtain required peak to peak pulse voltage at plate of V9, AGC keyer tube.
Ground either term #6 or term #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T7	6500Ω	8-8Ω	31X181	21000 ①	A-2900 ①	A-3856 ①	24S60 ①	S-31X ①	① Tape center tap on primary winding.

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C.	IMP	TRUETONE PART No.	QUAM PART No.	
SP1	8"	PM		4-8Ω	12AS39 ①	8AA2S ①	① Used in console models.
	8"	PM		3-4Ω	12AS38 ②		② Used in table models.
SP2	4"	PM		4Ω	12AS37 ③	4AG72S ②	③ Connect in parallel and phase.

COILS (RF-IF)

ITEM No.	USE	TRUETONE PART No.	NOTES
L1	UHF RF Coupling Coil	31B-598	
L3	RF, Mixer Grid & Osc. Coils	31K-137-019	
L3	Calib. Choke	31K-137-019	
D	RF Choke	31K-137-018	
L5	RF Choke	31K-137-014	
L4A	Ant Coils	31M-013, IU	Channel 1 - Includes coil-plate 43MC coil board assembly.
B	Ant Coils	31M-013, 2U	Channel 2
C	Ant Coils	31M-013, 3U	Channel 3
D	Ant Coils	31M-013, 4U	Channel 4
E	Ant Coils	31M-013, 5U	Channel 5
F	Ant Coils	31M-013, 6U	Channel 6
G	Ant Coils	31M-013, 7U	Channel 7
H	Ant Coils	31M-013, 8U	Channel 8
I	Ant Coils	31M-013, 9U	Channel 9
J	Ant Coils	31M-013, 10U	Channel 10
K	Ant Coils	31M-013, 11U	Channel 11
L	Ant Coils	31M-013, 12U	Channel 12
M	Ant Coils	31M-013, 13U	Channel 13
L7	Calib. Choke	31B-727	

ITEM No.	USE	TRUETONE PART No.	NOTES
L8B	RF, Mixer Grid & Osc. Coils	31M-13, 1U	Channel 2
C	RF, Mixer Grid & Osc. Coils	31M-13, 2U	Channel 3
D	RF, Mixer Grid & Osc. Coils	31M-13, 3U	Channel 4
E	RF, Mixer Grid & Osc. Coils	31M-13, 4U	Channel 5
F	RF, Mixer Grid & Osc. Coils	31M-13, 5U	Channel 6
G	RF, Mixer Grid & Osc. Coils	31M-13, 6U	Channel 7
H	RF, Mixer Grid & Osc. Coils	31M-13, 7U	Channel 8
I	RF, Mixer Grid & Osc. Coils	31M-13, 8U	Channel 9
J	RF, Mixer Grid & Osc. Coils	31M-13, 9U	Channel 10
K	RF, Mixer Grid & Osc. Coils	31M-13, 10U	Channel 11
L	RF, Mixer Grid & Osc. Coils	31M-13, 11U	Channel 12
M	RF, Mixer Grid & Osc. Coils	31M-13, 12U	Channel 13

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	TRUETONE PART No.	NOTES
L8A	RF & Osc. Coils	31M-113. 1U	Channel 1 - Includes complete 41MC coil board assembly.

ITEM No.	USE	TRUETONE PART No.	NOTES
L9	Converter Plate Coil	31K-264	

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L10	39MC Trap	9A2369		TV-152	6225	
L11	1st Video IF	9A2365		TV-131	6225	
L12	2nd Video IF	9A2363			6222	Includes 47. 25MC trap.
L13	3rd Video IF	9A2364			6221	Includes 41. 25MC trap.
L14	Series Peaking Coil	9A2375	19-3036	TV-180	6176	30 Microhenries
L15	Series Peaking Coil	36A35	19-3093■	TV-181■	6177■	82 Microhenries; Wound on 3900Ω resistor.
L16	Shunt Peaking Coil	36A34	19-4400	TV-190	6134	360 Microhenries
L17	4. 5MC Trap	9A2382				
L18	Shunt Peaking Coil	36A36	19-3100	TV-181	6177	100 Microhenries
L19	Shunt Peaking Coil	36A1	19-3100▲	TV-181▲	6177▲	100 Microhenries; Wound on 270Ω resistor.
L20	Series Peaking Coil	36A12	19-4160♦	TV-184♦	6120♦	160 Microhenries; Wound on 22K resistor.
L21	Shunt Peaking Coil	36A37	19-3250▲	TV-185▲	6181▲	235 Microhenries; Wound on 8200Ω resistor.
L22	1st Sound IF	9A2383				Includes 56MMF cap.
L23	2nd Sound IF	9A2368	17-3495	TV-113	6203	Includes 22MMF cap.
L24	3rd Sound IF	9A2368	17-3495	TV-113	6203	Includes 22MMF cap.
L25	Quadrature Coil	9A2367	20-1005		1480	
L26	RF Choke	9A2380	19-1001		4604	1. 5 Microhenries

■ Parallel with 3900Ω resistor.
▲ Parallel with 270Ω resistor.
♦ Parallel with 22K resistor.
▲ Parallel with 8200Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L27	79Ω		9A2371			6211*				Horiz. Freq. - Tap ② 55Ω Horiz. Waveform
L28	58Ω		9A2372							

* Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L29	. 270A	40Ω	. 9HY	52X95-5	C5037 ①	C-2996①	C-2326①	26C44 ①	C-23X ①

① Drill one new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Vertical Intergrator	2000MMF, 5000MMF, 5000MMF, 22K, 8200Ω, 8200Ω	76X7	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-100 115TM1 1405-01 V-1

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	. 4A 125V	16X162	16X163	333. 400 (N - . 4A)	346009	N 4/10	HN 3/10 to 1/2

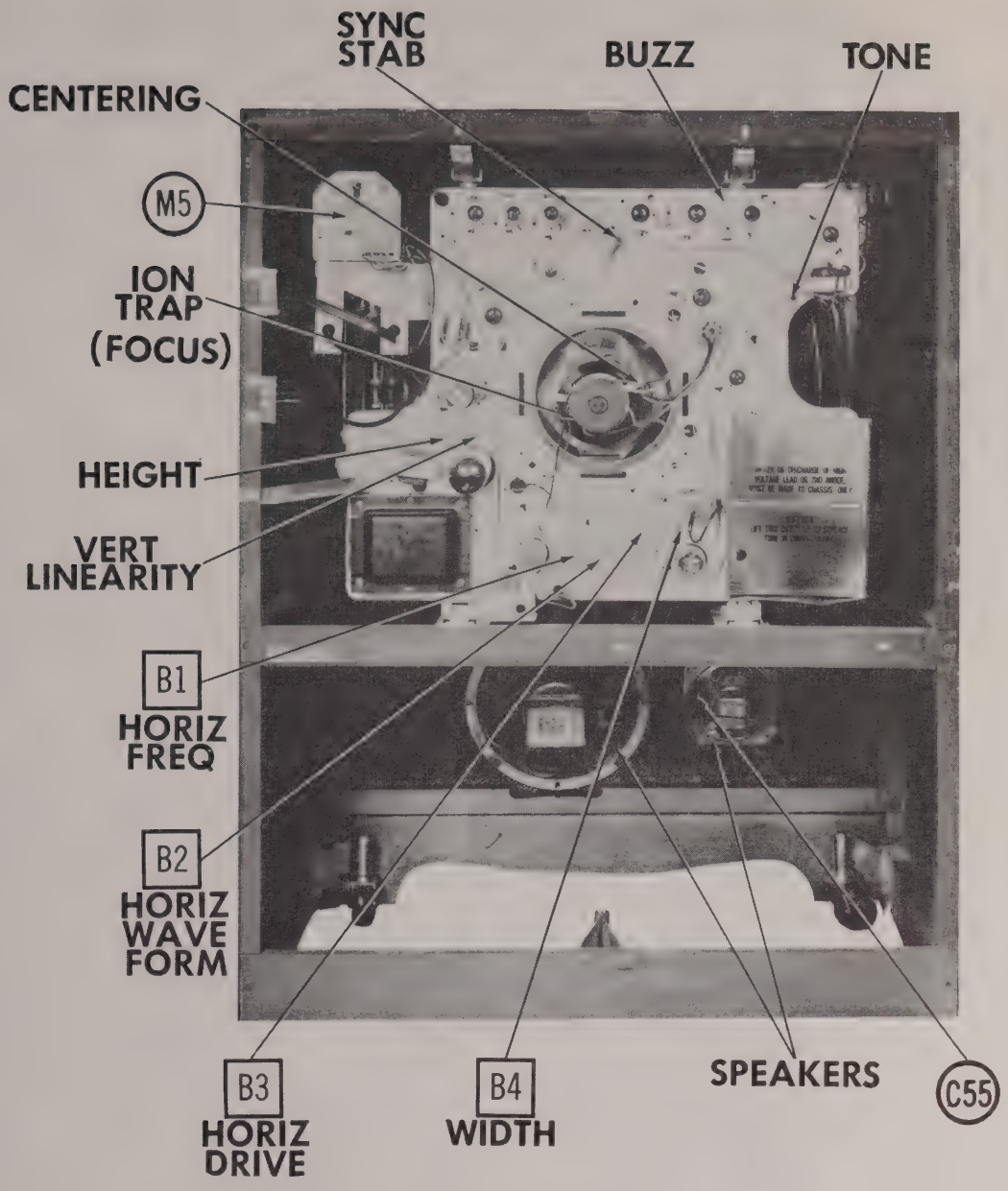
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		TRUETONE PART No.	SYLVANIA PART No.	
M2	1N82A	31K-111	1N82A	UHF Mixer (Clip In)
M3	1N60*		1N60	Video Detector (Pigtail)

* CK706A may be used in some versions.

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M4	Pilot Light		#15, A#51 Pilot Light Used in Models 2D1734C, 2D1735C, 2D1736B, 2D1736B.
M5	Tuner	25A1146	UHF/VHF - Used in Models 2D1734A, 2D1735A, 2D1736A, 2D2734A
	Tuner	25A1144	VHF - Used in Models 2D1734A, 2D1735A, 2D1736A, 2D2734A
	Tuner	25A1147	VHF Only - Used in Models 2D1734B, C, 2D1735B, C, 2D1736B, 2D2734B, C.
M6	Ant. Matching Network	31K-225-03	Includes Coils and Caps.
M7	Video Det. Ass'y.	9A2370	Includes 4th Video IF, Series Peaking Coil, M4 and Caps.
M8	Switch	2A464	On-Off, Push Type.
M9	Centering Device	2A435	Includes Yoke Rear Cover.
M10	Ion Trap	2A421	
M11	Trimmer Cap.	17A271	Horiz. Drive (170-700MMF)
	Yoke Clamp	30X611	
	Safety Glass	17X193-1	Tinted, All Models.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and turn the horizontal hold control fully clockwise. Tune in a TV station and adjust the horizontal frequency slug (B1) until the picture is just about to tear out of sync at the top of the picture.

Connect the vertical amplifier of the scope to point (E). Low side to chassis. With the picture in sync adjust B2 for equal peaks of the waveform as in Fig. 6. Turn the horizontal drive trimmer (B3) clockwise until white vertical lines appear in the left center of the screen and then turn counter clockwise until the white vertical lines disappear.

Adjust the width slug (B4) for a picture slightly wider than necessary to fill the picture mask horizontally.

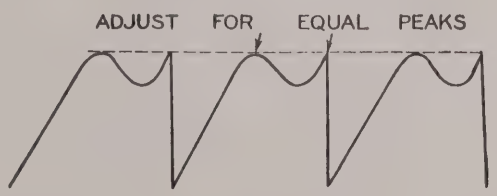
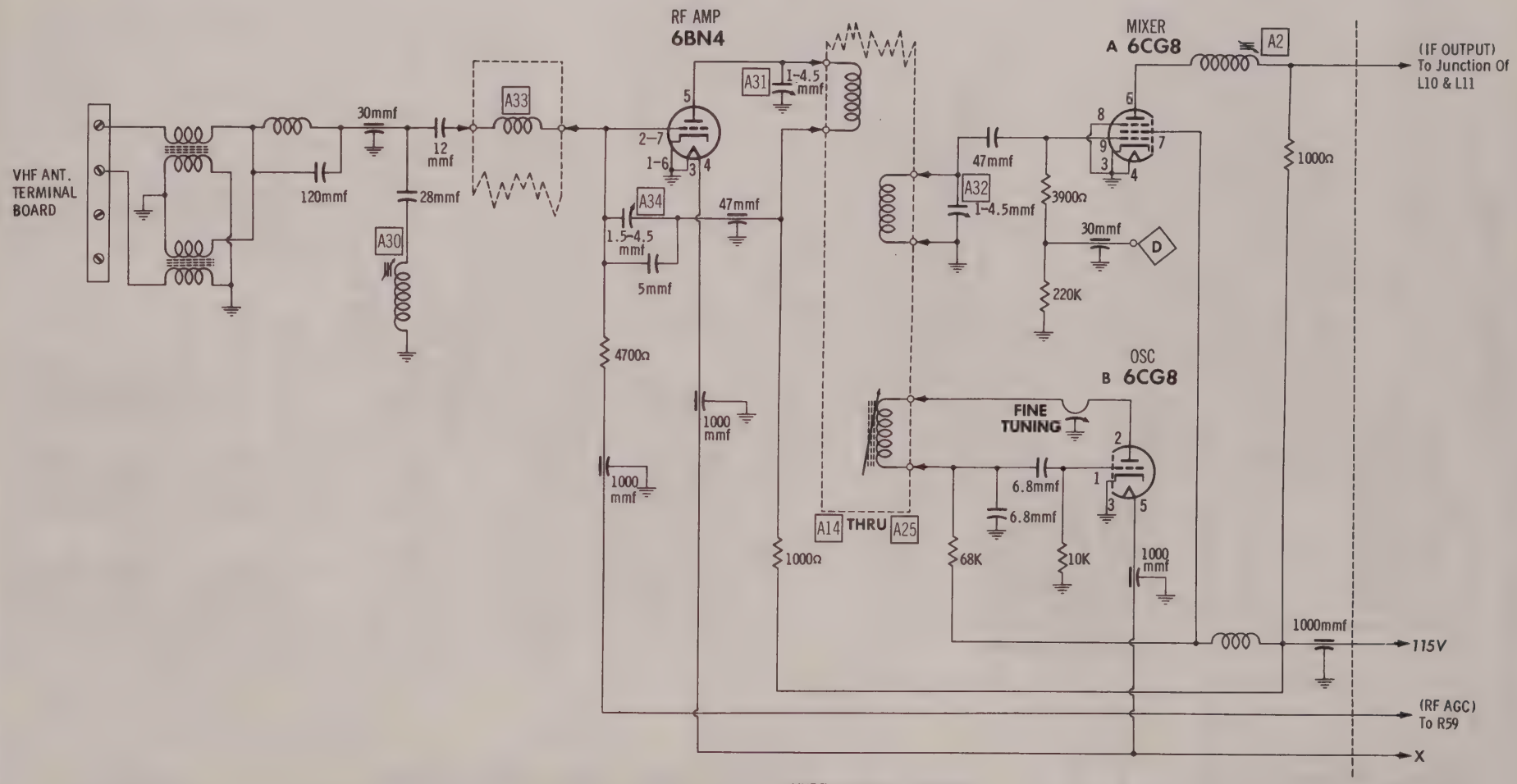


FIG. 6



VHF Tuner Part No. 25A1147.

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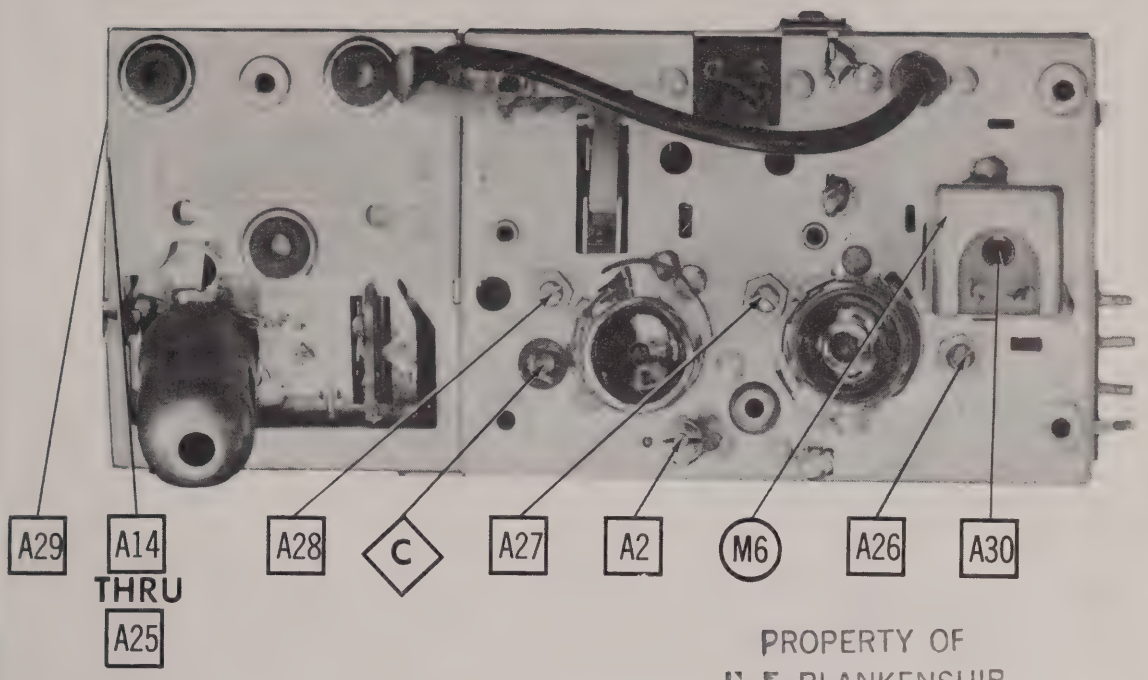
ALTERNATE VHF TUNER SCHEMATIC



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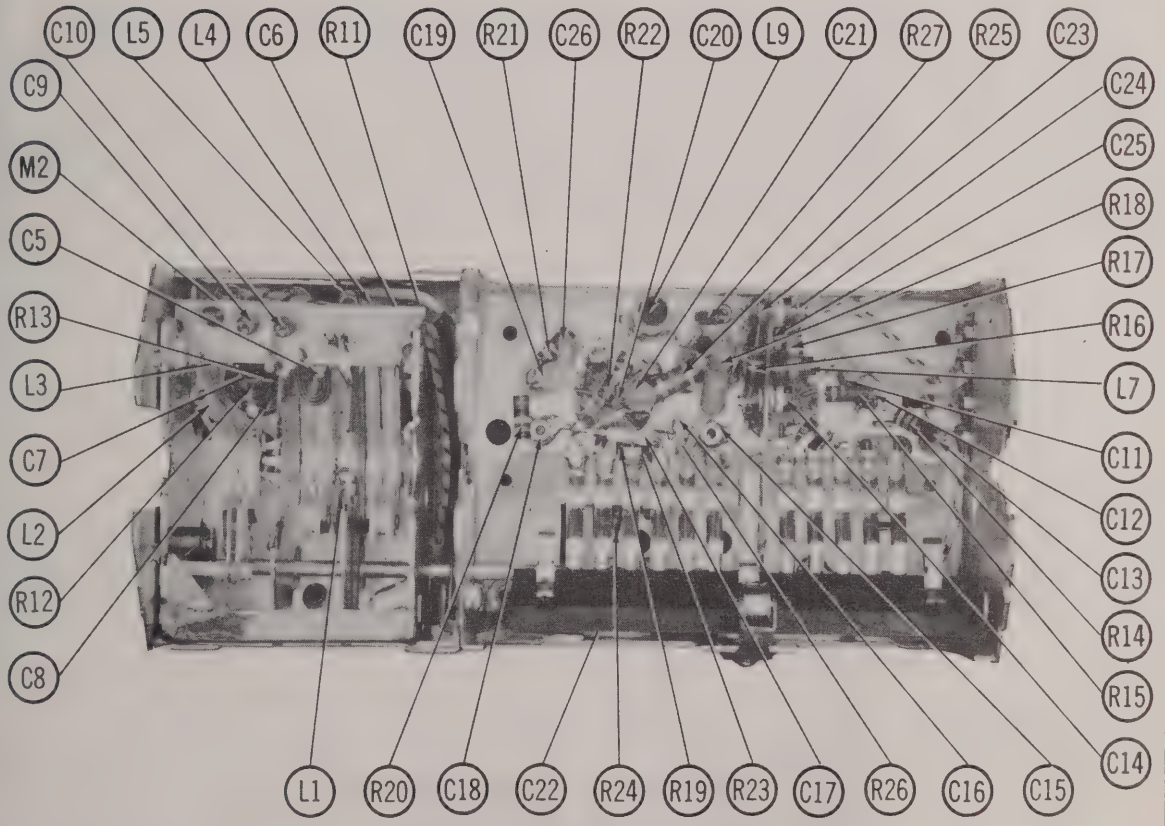
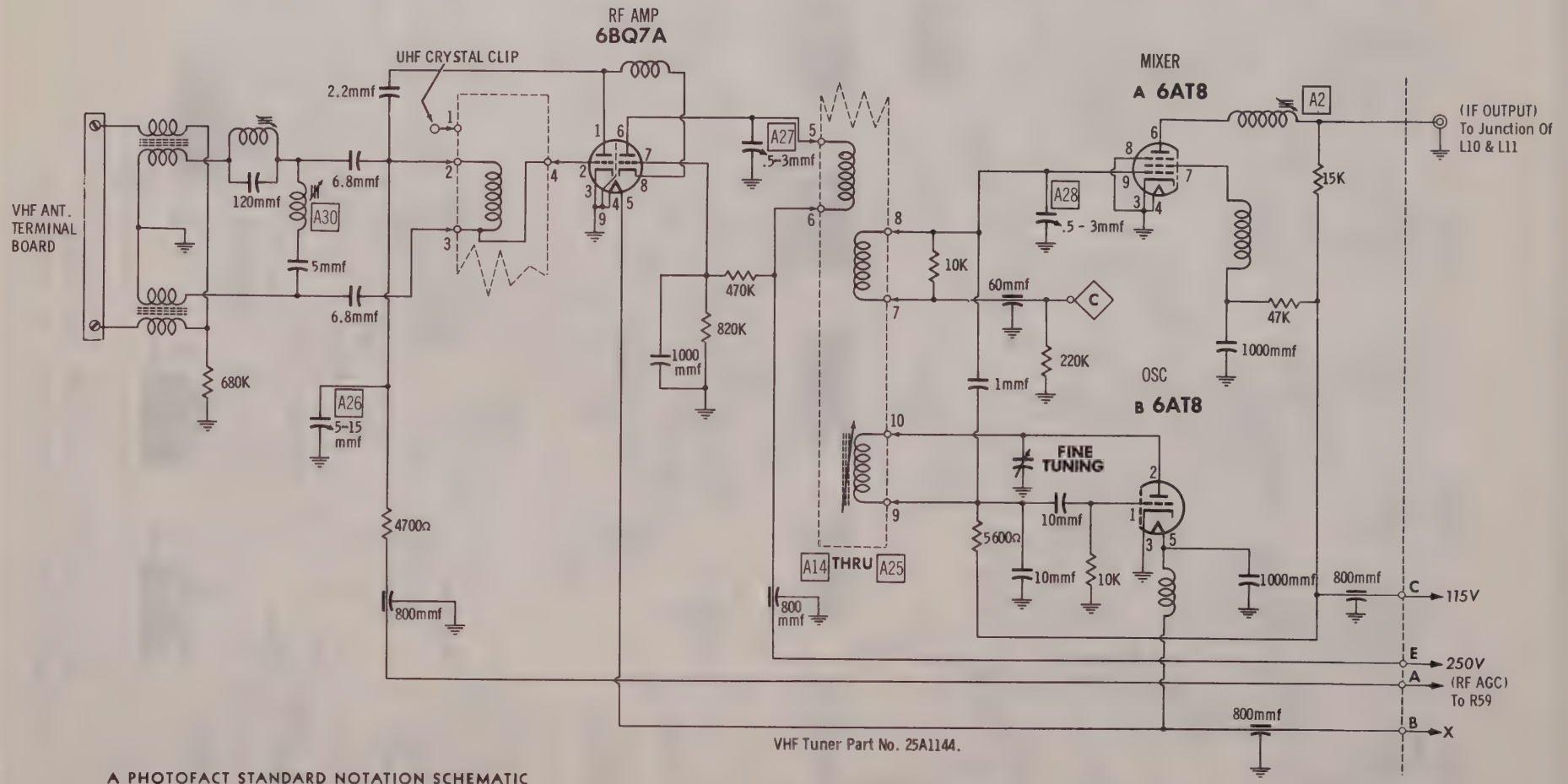
RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



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ALTERNATE VHF TUNER SCHEMATIC

PHOTOFACT* Folder

*TRADE MARK

WESTINGHOUSE MODELS H-14T/TU170, A, H-14T/TU171, A, H-14T/TU172, A (Ch. V-2311-45, V-2321-401)

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WESTINGHOUSE MODEL H14T170 (Ch. V-2311-45)

TRADE NAME	Westinghouse	MODELS	CHASSIS
		H14T170, A, H14T171, A, H14T172, A	V-2311-45
		H14TU170, A, H14TU171, A, H14TU172, A	V-2321-401
MANUFACTURER	Westinghouse Electric Corp., Television & Radio Division, Metuchen, N. J.		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	105-125 Volts AC, 60 Cycles	RATING 125 Watts, 1.2 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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WESTINGHOUSE MODELS H-14T/TU170, A, H-14T/TU171, A, H-14T/TU172, A (Ch. V-2311-45, V-2321-401)

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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type control knobs from side.
2. Remove 5 metal screws and rear cover.
3. Remove 2 speaker leads, picture tube socket, Ion trap, and HV lead.
4. Remove 2 speaker nuts and speaker.
5. Remove 1 metal screw holding top chassis bracket.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physcially contacting chassis.

MODEL	CHASSIS
H14T170	V-2311-45

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 4 o'clock, and should be adjusted first. The LOW band adjustment is located at 10 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

1. Remove 2 metal screws, nearest the front, from the bottom of cabinet.
2. Insert a screwdriver into the slot (center front) in the bottom of the cabinet and pry bottom out.
3. Holding the bottom of the safety glass, pull out and down to remove from 2 tabs at top.

FOCUS

Adjust the Ion trap for the best focus consistent with maximum brightness.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horiz. freq. slug (B2) until the picture synchronizes horizontally. (For location see tube placement chart.)

SOUND IF DETECTOR BUZZ

To eliminate sound IF detector buzz, adjust the quieting control (R4A) located on the rear of the chassis.

FUSES

A 4.7Ω fusible resistor R82 is used for LV power supply protection. (For location see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

WESTINGHOUSE MODELS H-14T/TU170, A, H-14T/TU171, A, H-14T/TU172, A (Ch. V-2311-45, V-2321-401)

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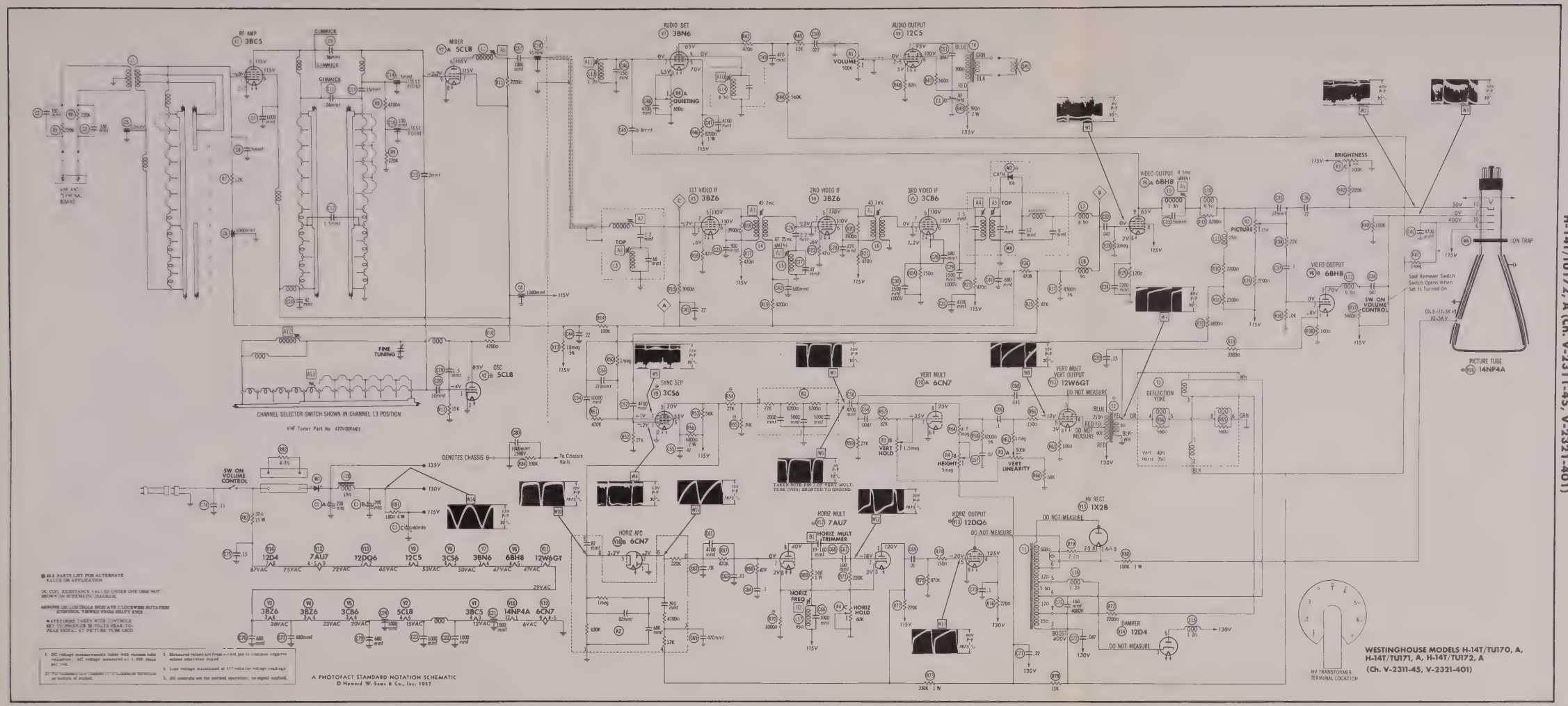
WESTINGHOUSE MODELS H-14T/TU170, A, H-14T/TU171, A, H-14T/TU172, A (Ch. V-2311-45, V-2321-401)
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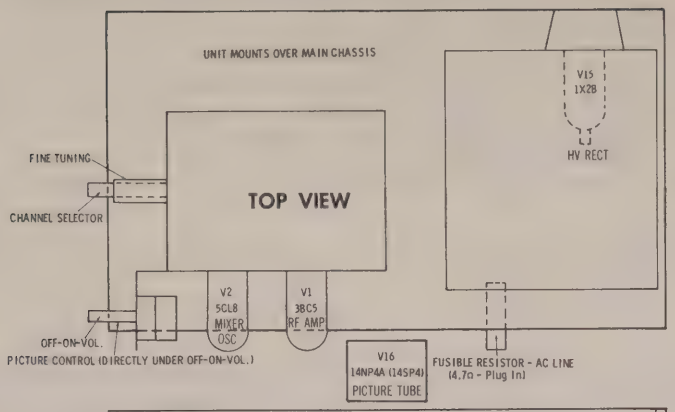
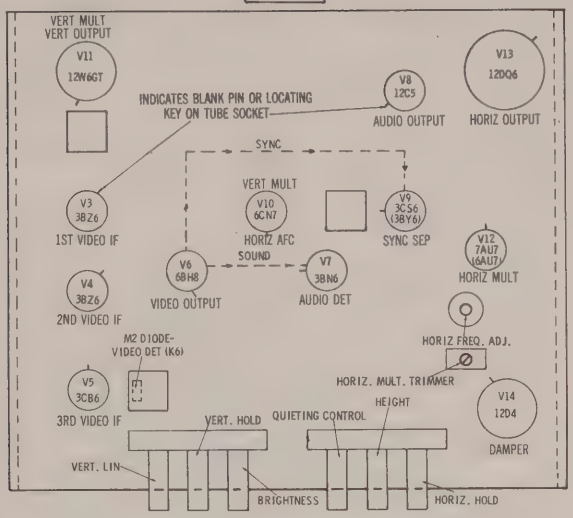
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner Part No 470V00RM01
DENOTES CHASSIS B-
To Chassis Rails
TAKEN WITH PIN 7 OF VERT MULT. TUBE (V10A) SHORTED TO GROUND.
SW ON VOLUME CONTROL
FINE TUNING
TOP
RF AMP V1 3BC5
MIXER V2A 5CL8
OSC V2B 5CL8
AUDIO DET V7 3BN6
AUDIO OUTPUT V8 12C5
1ST VIDEO IF V3 3BZ6
2ND VIDEO IF V4 3BZ6
3RD VIDEO IF V5 3CB6
VIDEO OUTPUT V6A 6BH8
VIDEO OUTPUT V6B 6BH8
SYNC SEP V9 3CS6
VERT MULT V10A 6CN7
VERT MULT V10B 6CN7
VERT OUTPUT V11 12W6GT
HORIZ AFC V8B 6CN7
HORIZ MULT V12 7AU7
HORIZ OUTPUT V13 12DQ6
HV RECT V15 1X2B
DAMPER V14A 12D4
PICTURE TUBE V16 14NP4A
BRIGHTNESS
PICTURE
VOLUME
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
HORIZ MULT TRIMMER
SW ON VOLUME CONTROL
ION TRAP
DEFLECTION YOKE
Spot Remover Switch Switch Opens When Set Is Turned On
DO NOT MEASURE
HV TRANSFORMER TERMINAL LOCATION
WESTINGHOUSE MODELS H-14T/TU170, A, H-14T/TU171, A, H-14T/TU172, A
(Ch. V-2311-45, V-2321-401)

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

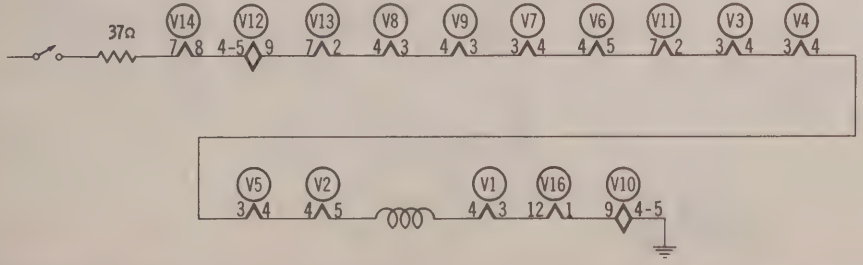
POWER SUPPLY FAILURE
No raster, no sound - Fusible Resistor (R82), Rectifier (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, Diode (M2), V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V16
Has pic, no sound - V7, V8

SYNC FAILURE
No vert. sync - V9, V10
No horiz. sync - V9, V10
No vert. or horiz. sync - V9

SWEEP FAILURE
No raster, has sound - V10, V12, V13, V14, V15, V16
No vertical deflection - V10, V11
Poor vert. linearity or foldover - V10, V11
Poor horiz. linearity or foldover - V12, V13, V14
Narrow picture - V12, V13, V14, M1
Vert. off freq. - V10, V11
Horiz. off freq. - V10, V12

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below.)



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to B-.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point Ⓒ. Low side to B-.	Not Used	43.1MC (unmod)	Any unused channel.	USE VTVM DC probe to point Ⓑ. Common to B-.	A1	Keep the generator output adjusted to provide a constant 1 volt output on VTVM. Adjust A1 for maximum deflection. Use peak nearest the top of coil form.
2.	"	"	"	47.25MC	"	"	A2	Adjust for MINIMUM deflection. Use peak nearest the top of coil form.
3.	"	"	"	45.2MC	"	"	A3	Adjust for maximum deflection. Use peak nearest the top of coil form.
4.	"	"	44MC (10MC Swp)	42.25MC 43.0MC 45.0MC 45.75MC	"	Vert. amp. thru 47K to point B. Low side to B-. Connect a 470MMF capacitor across scope terminals.	A4, A5	Use only enough sweep generator output to provide usable pattern on scope. Adjust A4 for maximum amplitude of response curve similar to Fig. 1. Adjust A5 to correct tilt. If necessary, retouch A1 through A5 for correct position of markers as in Fig. 1.
5.	Fig. 2	Across antenna terminals thru matching network (Fig. 2).	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A6, A7, A8	Adjust A6 and A7 for maximum amplitude and correct position of 211.25MC marker (at 50%). Adjust A8 to place 215.75MC marker in trap notch. (See Fig. 3).

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point Ⓑ. Low side to B-.	4.5MC (unmod)	Any unused channel.	DC probe thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Common to B-.	A9	Use high generator output and adjust A9 for MINIMUM deflection.

SOUND IF ALIGNMENT USING ON THE AIR SIGNAL

1. Tune in a TV station and connect an attenuator between the antenna and receiver terminals so that the signal may be varied from strong to weak.
2. Set the quieting control (R4A) located on the back of the chassis at mid-range.
3. Apply a strong signal to the receiver and adjust A10 for maximum sound output. If peak appears at two different positions that are widely separated, use the one with the slug farthest counter clockwise. If two peaks occur within a narrow range of adjustment, sufficient signal is not being applied to the receiver and must be increased or the quieting control is not set at the desired position.
4. Adjust A11 for maximum sound output. If peaks occur at two different points of adjustment, use the one with the slug farthest counter clockwise. Reduce the signal to its lowest usable level and recheck adjustments.
5. Reduce the signal input to the receiver until noise can be heard and adjust the quieting control (R4A) for MINIMUM noise and hiss. It is imperative that a very weak signal be used for this adjustment. Do not leave the quieting control in maximum counter clockwise position.

SOUND IF ALIGNMENT USING TEST EQUIPMENT

Preset the quieting control (R4A) at mid-range position.
Preset the picture control (R2) to maximum.
The marker generator is used in this procedure as an AM signal generator.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side of sweep generator and marker generator to point Ⓑ. Low sides to B-.	4.5MC (15KC Swp)	4.5MC (400~ 30% AM Mod)	Any unused channel.	Across volume control.	A9, A10, A11	Increase marker generator output until base line is modulated with 400~ AM. Adjust A10 for MINIMUM AM base line modulation. Reduce the AM signal and repeat adjustment of A10 until base line is flat when A10 is tuned exactly to 4.5MC. Adjust A11 for symmetrical curve similar to Fig. 5. Adjust A9 for maximum amplitude of curve. Recheck adjustment of A10.

OSCILLATOR ALIGNMENT FOR TUNER #470V009M01

1. Switch to the highest high band channel (7-13) operating in the area and set the fine tuning to mid-range position.
2. Using a non-metalic alignment tool, adjust the high band oscillator slug A12 for best picture detail and sound quality.
3. Switch to the highest low band channel (2-6) operating in the area.
4. Adjust the low band oscillator slug (A13) for best picture detail and sound quality. Check the previously made adjustment and if the tuning has changed, repeat the above adjustments.

OSCILLATOR ALIGNMENT FOR TUNER #470V013M01

1. Switch to the highest high band channel (7-13) operating in the area and set the fine tuning to the center of its range.
2. Adjust the high band oscillator slug (A14) for the best picture detail and sound quality.
3. Switch to channel 6 or 5 if either is operating in the area and adjust the channel 6 oscillator slug (A15) for best picture detail and sound quality.
4. Switch to channel 4 or 3 if either is operating in the area and adjust channel 4 oscillator slug (A16) for best picture detail and sound quality.
5. Switch to channel 2 if it is being used in the area and adjust channel 2 oscillator slug (A17) for best picture detail and sound quality.

ANTENNA TRAP ALIGNMENT

The antenna trap is adjustable over the IF range of the receiver and is preset at the factory at 44MC. A18 can be adjusted to MINIMIZE any interference in this range.

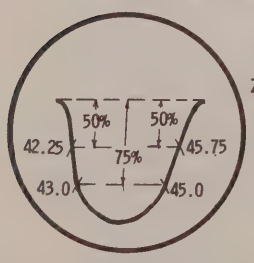
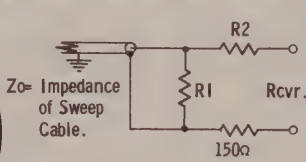


FIG. 1



Zo	R1	R2
56Ω	50Ω	120Ω
75Ω	82Ω	110Ω

FIG. 2

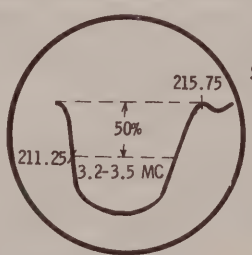


FIG. 3

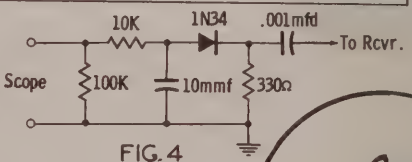


FIG. 4

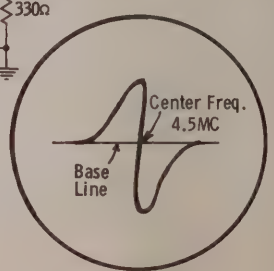
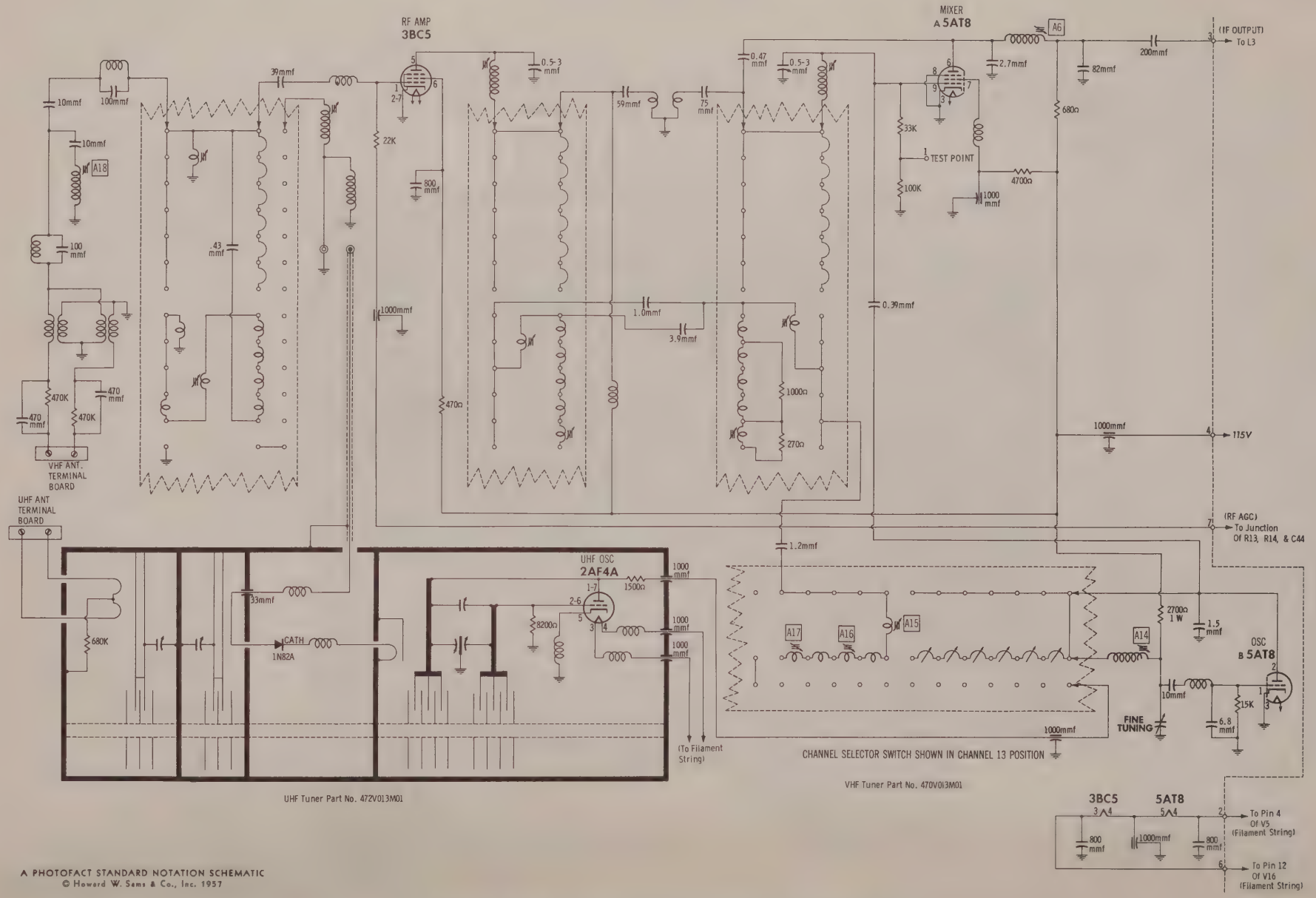


FIG. 5

CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE UHF-VHF TUNER SCHEMATIC

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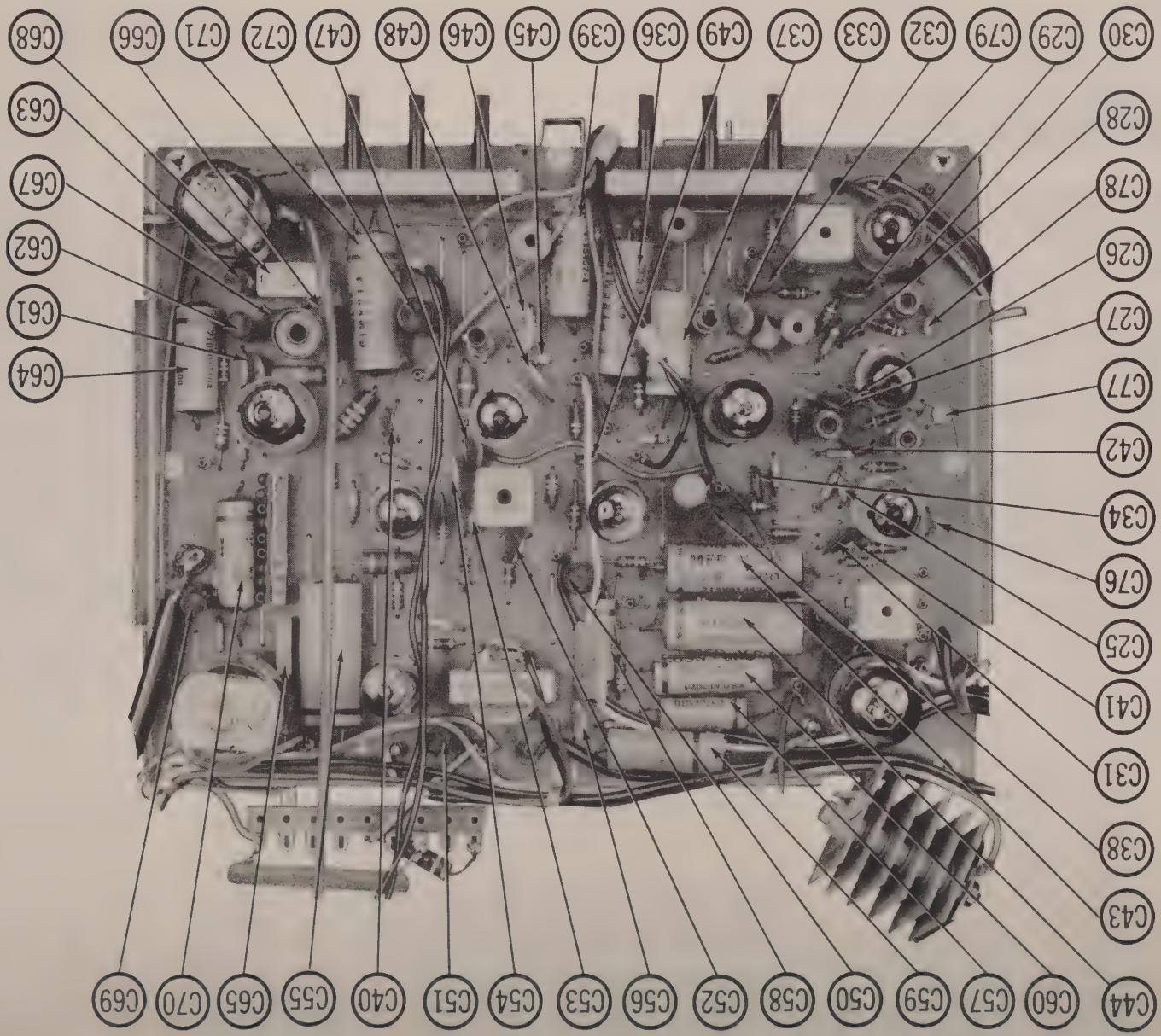
DENVER, COLORADO

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amp.	3BC5	
V2	Mixer Osc.	5CL8	
V3	1st IF Amplifier	3BZ6	
V4	2nd IF Amplifier	3BZ6	
V5	3rd IF Amplifier	6CB6	
V6	Video Output	6S3B	
V7	Audio Det.	3S8N8	
V8	Audio Output	12C8	
V9	Sync Sep.	3C86	Note 1
V10	Vert Mult -Horiz AFC	6CN7	
V11	Vert Mult.-Vert Output	12W6GT	
V12	Horiz. Mult	7AU7	Note 2
V13	Horiz. Output	12DQ6	
V14	Damper	12D4	
V15	HV Rectifier	1X2B	

Note 1: 3BT6 may be used in some versions.
Note 2: 6AU7 or 6AU7A may be used in some versions.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: Westinghouse Part No.	CBS Part No.	GENERAL ELECTRIC Part No.	SYLVANIA Part No.	NOTES
V16	4MP14 14SP4			14SP4 ① 14SP4 ②	1 Silver Screen 85

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CORNELL DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SANGAMO Part No.	SPRAGUE Part No.	NOTES
C1A	+200	150	218V108M01	AB20150	3150-1333/5	UPS417 8	TMD-21	D-095	TVM1-1530	N238T*
B	+300	150				TCD47	TCD-47			
C	+80	150								
D	30	150								

* Mos catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL DUBILIER Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C2	330			1468-00033	DD-331	5WST33	ED-330	UC-533	1FM-333
C3	330			1468-00033	DD-331	5WST33	ED-330	UC-533	1FM-333
C4	5			MPO-5I S	TCS-5	C10V5C	TCO-5	ZT-505	5TCCB-V5
C5	18								
C6	1000			EF-001		MFT-1000			503C-D1
C7	1000			BPD-001	DD-103	B7AED1	RD-1000	DC521	5MK-D1
C8	1000			EF-001		MFT-1000			503C-D1
C9	.39								
C10	47			MTSO-S1 47	TCM-47	C10Q47U	TCT-47	NT-5447	5TCU-Q47
C11	.54								
C12	5.5			MPO-S1 5	TCS-5R5	C10V5C	TCO-5	ZT-5505	5TCCB-V5
C13	5.5			MPO-S1 5	TCS-5R5	L10Q5	TCT-5	UC-5405	5TCA-Q5
C14	5.5								
C15	5			MPO-S1 5.5	TCS-5R5	C10V5C	TCO-5.5		5TCCB-V5
C16	800								
C17	2000			BPD-001	DD-103	B7AED1	RD-1000	DC521	5MK-D1
C18	91								
C19	5.5								
C20	10			MPO-S1 10	TCS-10	CTA9Q1C	TCO-10	ZT-541	5CA-Q1
C21	5000			EF-001		MFT-1090			503C-D1
C22	1000			BPD-001	DD-103	B7AED1	RD-1000	DC521	5MK-D1
C23	1000			BPD-001	DD-103			DC521	5MK-D1
C24	1000			EF-001		MFT-1000			503C-D1
C25	600		218V300M08	BPD-0008	DD-601	L10T8	ED-600		5GA-T8
C26	2.2		217V012A22	MPO-S1 2.2	TCS-2R2	C10V22C	TCO-2.2		5TCCB-V22
C27	47		215V300M06	MPO-S1 47	TCS-47	C10Q47C	TCO-47	ZT-5447	5TCC-Q47
C28	470		215V300M07	BPD-0047	DD-471	B7AIT47	ED-470	UC-5347	5GA-T47
C29	1500	1000	V10T10	BVD-15-1500	DD-152	B7AIXD15	RD45-1500	DC3D15	20GA-D5
C30	1500	1000	V10T10 12	BVD-15-1500	DD-152	B7AIXD15	RD45-1500	DC3D15	20GA-D5
C31	4700		2.5V330M04	BPD-0047	DD-472	B7AIXD47	ED-0047	UC-5347	5GA-D47
C32	.047	400	216V104A73	BC84V47	DD-503			BC-84V47	68E-S47
C33	56		2.5V015A80						
C34	3300		215V332A22	BPD-0022	DD-322	B7AIXD22	ED-0022	UC-5322	5GA-D22
C35	27								
C36	.22	400	210V012A24	P488N-22		CUB4P22		GEM-4022	4TM-P22
C37	.1	400	210V01.1A24	P488N-1		DF-103	CUB4P1	GEM-401	4TM-P1
C38	.047	400	210V094M73	BPD-05		DF-503	BC84V47		4C6E-S47
C39	.15	400	215V300M48	P488N-15			CUB4P15	GEM-4015	4TM-P15
C40	4700		215V300M04	BPD-0047		DD-472	B7AIXD47	ED-0047	UC-5247
C41	.047	600	215V104A81	BPD-00568		DD-683	B7AIXT68	ED-680	UC-5368
C42	680		215V116A81	BPD-00068		DD-681	B7AIXT68	ED-680	UC-5368
C43	.22	400	210V012A24	P488N-22			CUB4P22		4TM-P22
C44	.22	400	210V012A24	P488N-22			CUB4P22		4TM-P22
C45	6.8		217V026A89	MPO-S1 6.8	TCS-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68
C46	150		215V015A81						
C47	4700		215V300M04	BPD-0047	DD-473	B7AIXD47	ED-0047	UC-5347	5GA-D47
C48	4700		215V300M04	BPD-0047	DD-473	B7AIXD47	ED-0047	UC-5347	5GA-D47
C49	470		215V300M07	BPD-00047	DD-471	B7AIXT47	ED-470	UC-5347	5GA-T47
C50	.033	600	210V033M33	BPD-03	DF-303	BC84D33	ED-03	ACE633	66E-S33
C51	.0047	600	210V047M33	BPD-0047	DF-473	BC84D47	GP-4700	ACE647	66E-D47
C52	4700		215V300M04	BPD-0047	DD-473	B7AIXD47	ED-0047	UC-5347	5GA-D47
C53	4700		215V300M04	BPD-00047	DD-473		L10T47	ED-470	UC-5347	5GA-T47
C54	20000		215V010M03	BPD-01	DD-103	B7AIXE	ED-01	DC511	5HK-S1
C55	.047	400	215V104A74	P488N-47				CUB4P47	GEM-4047	4TM-P47
C56	4700		215V300M04	BPD-0047	DD-472	B7AIXD47	ED-0047	UC-5347	5GA-D47
C57	.05	600	V15W7-1	BPD-05	DF-503	BC84D5	ED-05	GEM-512	6TM-S5
C58	.0047	600	210V104M04	BPD-0047	DD-473	BC84D47	GP-4700	GEM-4247	6TM-D47
C59	.1	400	210V01.1A24	P488N-1		DF-104	CUB4P1	GEM-401	4TM-P1
C60	.033	600	210V033A33	BPD-03	DF-303	BC84D33		GEM-4133	6TM-S33
C61	4700		215V010A54	BPD-0047	DD-473	B7AIXD47	ED-0047	UC-5247	5GA-D47
C62	.1	400	210V01.1A24	P488N-1		DF-104	CUB4P1	GEM-401	4TM-P1
C63	.01	600	215V010M03	BPD-01	DD-103	BC85U	GP-10000	ACE5U	5SK-S1
C64	1.1	400	210V01.1A24	P488N-1		DF-104	CUB4P1		GEM-401	4TM-P1
C65	470		215V104A74	P488-00047			MS-247	CY15C471K		MS-247
C66	1000		215V310M02	488-001		DD-103	1R5DH	CY15C102K	MCS255	MS-21
C67	800		215V010A09							
C68	39-160		217V501M01							N230
C69	.01	600	210V010M03	BPD-01		DD-103	BC85U	GP-10000	ACE5U	66E-S1
C70	.1	400	210V01.1A24	P488N-1		DF-104	CUB4P1		GEM-401	4TM-P1
C71	.22	400	210V012A24	P488N-22			CUB4P22		GEM-4022	4TM-P22
C72	.047	600	210V047M73	BPD-05		DF-503	BC86T47		ACE647	66E-S47
C73	180	4000	215V300M27							
C74	.15	400	210V115M01	P488N-15			CUB4P15		GEM-4015	4TM-P15
C75	.15	400	210V115M01	P488N-15			CUB4P15		GEM-4015	4TM-P15
C76	680		215V104A81	BPD-00068		DD-681	B7AIXT68	ED-680	UC-5368	5GA-T68
C77	680		215V104A81	BPD-00068		DD-681	B7AIXT68	ED-680	UC-5368	5GA-T68

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING CAP	RATING VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C78	680		215V116A81	BPD-00068	DD-681	B7AIXT68	ED-680	UC-5368	5GA-T68	
C79	680		215V116A81	BPD-00068	DD-681	B7AIXT68	ED-680	UC-5368	5GA-T68	
C80	1000	1500		BVD1-15-1000	DD31-102	B7AIXD1	HD15-1000	DC302L	20GA-D1	

CONTROLS

ITEM No	RESIST ANCE	WATTS	REPLACEMENT DATA: Westinghouse Part No.	CENTRALAB Part No	CIAROSTAT Part No.	IRC Part No	MALLORY Part No	INSTALLATION NOTES
R1A	500K	1	270V005M02		A47-500K-2		U48	Volume
B	Shaft				PS-3		Not Req.	
C	Switch				SWE-21		US-28	
R2A	15K		270V003M05	B-30	A47-15K-3	Bil-118	U26	Picture
B	Shaft		Not Req.	Not Req.	PS-3	SK1	Not Req.	
R3A	500K		270V019M03					Vert. Lin
B	1.5Meg							Vert. Hold
C	100K							Brightness
R4A	600K		270V019M03					Quieting
B	5Meg							Sync Sep.
C	80K							Horiz. Hold

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Westinghouse Part No.	IRC Part No.	NOTES
R5	220K		250V222A24	BTS-220K	
R6	220K		250V222A24	BTS-220K	
R7	12K			BTS-12K	
R8	4700			BTS-470	
R9	220K		250V222A24	BTS-220K	
R10	4700			BTS-470	
R11	2200			BTS-2200	
R12	15K			BTS-15K	
R13	18Meg 5%		260V311A88		
R14	100K		250V102A24	BTS-100K	
R15	3900		250V039M02		
R16	3900		250V039M03		
R17	470		250V234A75	BTS-470	
R18	47		250V234A70	BTS-47	
R19	8200		V9827-31	BTS-8200	
R20	3900		250V039M02	BTS-3900	
R21	4700		250V234A75	BTS-470	
R22	47		250V234A70	BTS-47	
R23	470		250V234A71	BTS-470	
R24	1800		250V218A	BTS-1800	
R25	47K		250V234A73	BTS-47K	
R26	470K		250V234A74		
R27	4300 5%		260V143A33		
R28	1Meg		250V331A05	BTS-1Meg	
R29	1200		250V122A31	BTS-1200	
R30	2700		250V272A72	BTS-2700	
R31	2700		250V272A72	BTS-2700	
R32	6800		250V256A53	BTS-6800	
R33	82000		V9827-31	BTS-82000	
R34	22K		250V223A33	BTS-22K	
R35	2700		250V272A72	BTS-2700	
R36	10K		250V103A72	BTS-10K	
R37	5600		250V256A52	BTS-5600	
R38	1000		250V102A01	BTS-1000	
R39	3300		250V332A32	BTS-3300	
R40	100K		250V104A24	BTS-100K	
R41	1Meg		250V331A05	BTS-1Meg	
R42	220K		250V223A34	BTS-220K	
R43	470		250V234A74	BTS-470	
R44	560K		250V215A64	BTS-560K	
R45	12K		250V312A33	BTS-12K	
R46	8200	1	250V282A33	BTA-8200	
R47	5600		250V256A52	BTS-5600	
R48	820		250V228A20	BTS-82	
R49	3300	3	250V342A35	BTS-3300	
R50	1Meg		250V331A05	BTS-1Meg	
R51	470K		250V224A74	BTS-470K	
R52	27K		250V227A73	BTS-27K	
R53	56K		250V256A53	BTS-56K	
R54	33K		250V233A33	BTS-33K	Note 1
R55	39K		250V233A93	BTS-39K	Note 2
R56	6800	2	250V342A32	BTS-6800	
R57	33K		250V233A33	BTS-33K	
R58	82000 5%		250V218A22	BTS-8200 5%	
R59	27K		250V227A33	BTS-27K	
R60	68K		250V268A33	BTS-68K	
R61	1000		250V102A31	BTS-1000	
R62	1Meg		250V231A05	BTS-1Meg	
R63	100K		250V231A01	BTS-100	
R64	4.7Meg		250V247A75	BTS-4.7Meg	
R65	560K		250V225A65		
R66	5600		250V256A56		
R67	470K		250V224A74		
R68	47K		250V224A73		
R69	56K	1	250V235A53	BTA-56K	
R70	1000		250V221A03	BTS-1000	Note 3
R71	2700		250V272A72		
R72	330K		250V322A34		
R73	330K	1	250V322A34		
R74	150Ω		250V151A51	BTS-150	
R75	470K		250V224A74	BTS-470K	
R76	270Ω		250V151A71	BTS-270	
R77	2300Ω		250V232A33	BTS-2300	
R78	15K		250V215A53	BTS-15K	
R79	2, 3		251V012A29	RW1-2, 3	
R80	100K	1	V9827-18	BTA-100K	
R81	1000	4	251V020M05		
R82	6, 7Ω		251V006M01		
R83	3.7Ω	15	251V013M03		
R84	330Ω		250V333A34	BTS-330K	

Note 1: Some versions may use a 12K resistor in this application.
Note 2: Some versions may use 47K in this application.
Note 3: Some versions may use 1200Ω in this application.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: Westinghouse Part No.	Halldorson Part No.	Merit Part No.	RCA TYPE No	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
T1	Horiz. Output Trans.	493V004M02						FLY-95*	
T2	Vert. Output Trans.	420V033M01 420V033M02	21900 ② ③	A-2322 ③					A-108X ③
T3A	Yoke(90°) Horiz(19-9MH)	490V005M01	DF607 ③	MDF-923 ③	235D1 ③	Y90F19/43	DY-16A ③	Y-16 ③	RY-41 6 YC1
B	Vert(35.5MH)	780V028M01 & 780V014M01 ④	③	③	③	③	③	③	& C1 ③

① Alternate part number.
② Use 8 to 1 turns ratio.
③ Connect vertical output tube screen to B+.
④ Yoke rear cover and centering device.
⑤ Yoke clamp.
⑥ Requires new rear cover, centering device and yoke clamping device.
⑦ To mount same as original, connect yoke terminal #1 to horiz. output trans. term #4; yoke term #3 to horiz. output trans. term #3; yoke terma. #2 and #3 to resistor #T1. To mount with leads out bottom, connect yoke term #3 to horiz. output trans. term #4; yoke term #1 to horiz. output trans. term #3; yoke terms #2 and #7 to resistor R77.
⑧ Use original horiz. yoke damping network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
6						6	
5					5		
4		4		4		4	
7		7			7		
3		3			3		

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA: Westinghouse Part No.	Halldorson Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T4	2400Ω	3-4Ω	430V031M01	21101 ①	A-3025 ①	A-3332 ①	26S58 ①	S-12X ①	① Use original channel mtg. frame & terminal board.

SPEAKER

ITEM No	TYPE SIZE	TYPE FIELD	TYPE V C IMP	REPLACEMENT DATA: Westinghouse Part No.	QUAM Part No.	NOTES
SP1	4"	PM	3-4Ω	570V015M01	4A0T	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L1	Ant. Transformer	V9824-9				
L2	Conv. Plate Coil	V9831-7				
L3	1st Video IF	236V003M01				Includes 4L 3.5MC Trap 2, 3 and 69MMF caps.
L4	2nd Video IF	235V004M01				
L5	47.25MC Trap	230V003M01				
L6	3rd Video IF	235V004M01				
L7	Series Peaking Coil	V19790-1	10-3100	TV-181	6123	100 Microhenries
L8	Shunt Peaking Coil	V19786-8		TV-180	6122	240 Microhenries
L9	4.5MC Trap	V19795-1				
L10	Series Peaking Coil	V19788-3	10-3135		6156	140 Microhenries
L11	Shunt Peaking Coil	V19786-6		TV-180	6123	330 Microhenries
L12	Series Peaking Coil	V19786-1	10-3100	TV-181	6123	100 Microhenries
L13	Sound IF	V19795-2				
L14	Quadrature Coil	230V007M03				Includes Cap.
L15	RF Choke	230V019M10	10-1006		6854	14 Microhenries
L16	RF Choke	230V019M10	10-1006		6854	14 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES PRI	DC RES SEC	REPLACEMENT DATA: Westinghouse Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	RCA TYPE No	Ram Part No.	Thordarson Part No.	NOTES
L17	95		230V005A01							

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT .000 Ma.	REPLACEMENT DATA: Westinghouse Part No.	Halldorson Part No.	Merit Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.
L18	.240A	19Ω	4.3H	430V032M01					C-34X

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse Part No.	REPLACEMENT DATA
K1	Vertical Intergrator	22K, 82000Ω, 8200Ω, 3000MMF, 2000MMF, 6000MMF	V19868-1	Aerovox PA-501 Centralab PC-304 Sprague 163C12
K2	AFC	825MF, 825MF, 2200MF, 680MMF, 4.7K, 12K, 18Meg, 220K, 680K	219V002M01	

RECTIFIERS

ITEM No	RATING CURRENT (Measured)	REPLACEMENT DATA: Westinghouse Part No.	FEDERAL	GENERAL ELECTRIC Part No.	INTERNATIONAL	MALLORY Part No.	RADIO RECEPTOR Part No.	SARKES TARZIAN Part No.
M1	300A	215V005M02 ①	1023A ①	1N1007 ②	MR350 ①	6S350 ①	6QA2 ①	350A ①

① Belesium type.
② Germanium type.

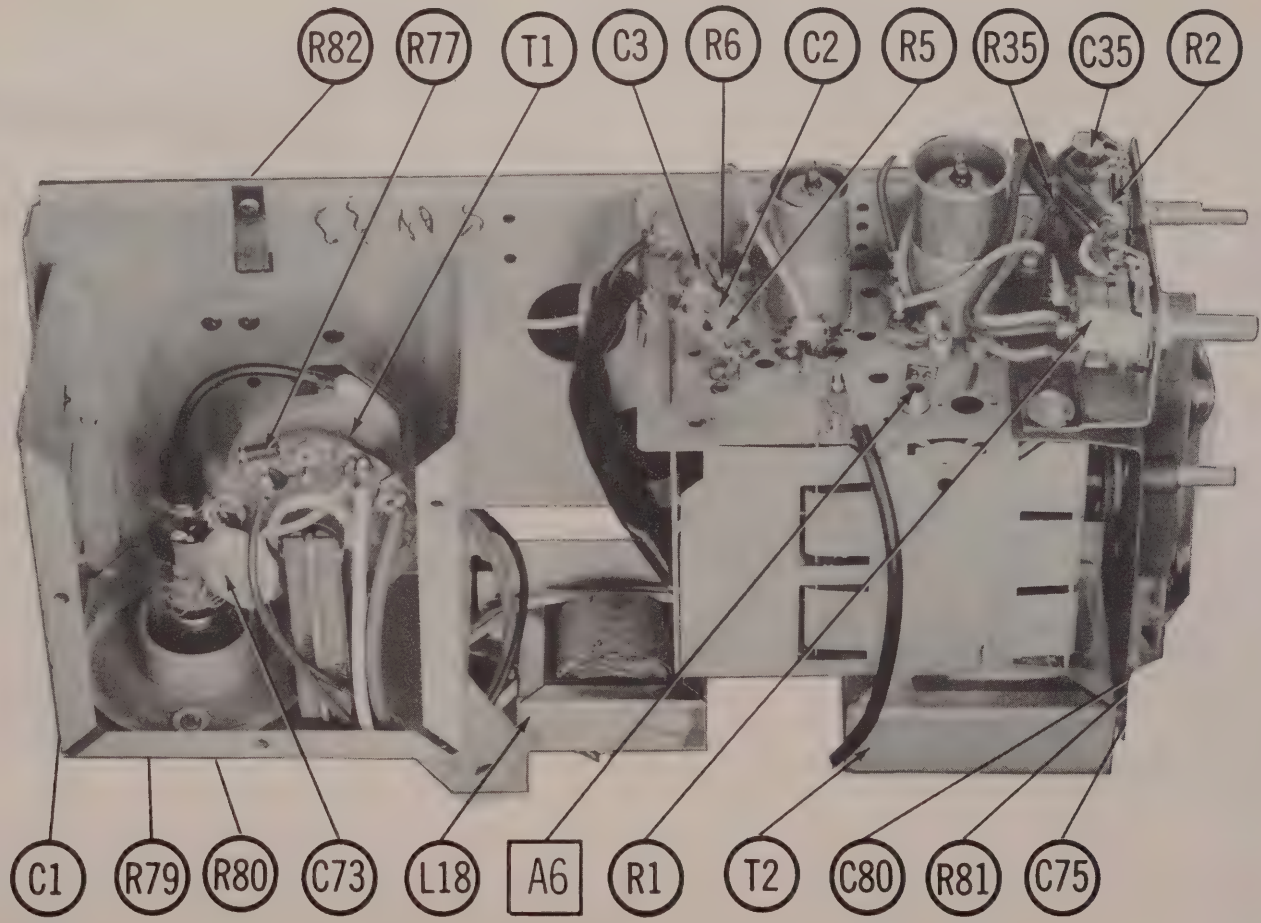
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: SYLVANIA Part No.	NOTES
M2	*X6	V19018-3 1N60	Video Detector (Pigtail)

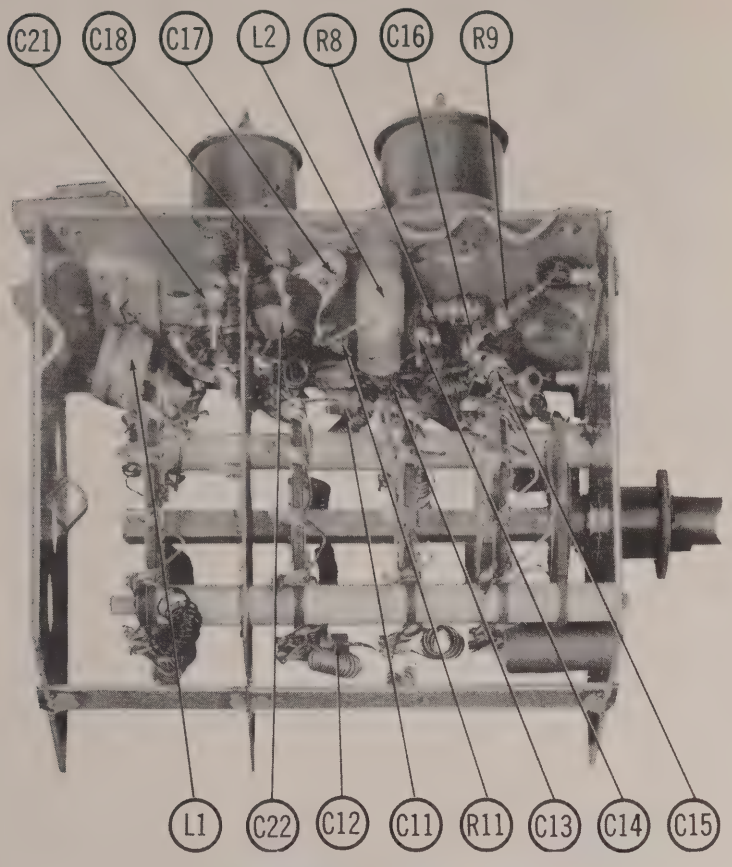
* A CK706A or 1N64 may be used in this application.

MISCELLANEOUS

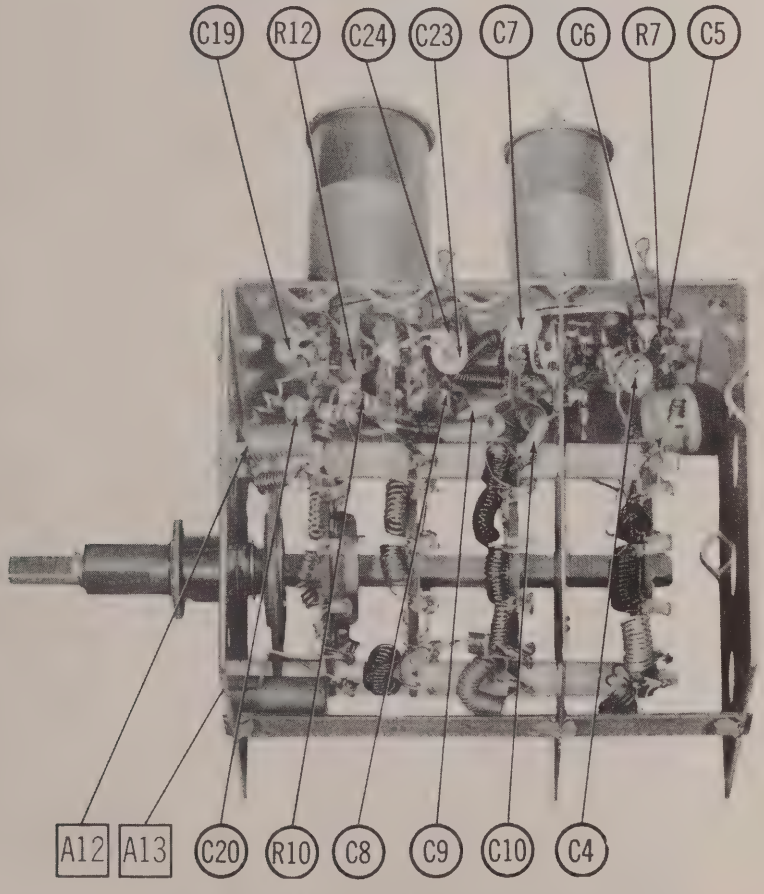
ITEM No.	PART NAME	Westinghouse Part No.	NOTES
M3	Tuner	470V003M01	VHF, 12 Position. Chassis V-321L-45.
	Tuner	470V013M01	VHF, 12 Position. Chassis V-322L-40L.
	Tuner	470V014M01	UHF, Chassis V-321L-40L.
M4	Video Detector Assembly	235V003M01	Includes 4th Video IF, Capa., Series Peaking Coil and M3. Part of Yoke Rear Cover.
M5	Centering Device	781V983M01	
M6	Ion Trap	757V501A04	
	Yoke Clamp	788V014M01	
	Printed Board	390V020M01	
	Mask	831V003M03	
	Handle	558V048M01	
	Dial	530V029M01	UHF, Models H14TU17O, A, H14TU17I, A, H14TU17J, A.
	Knob	530V023M01	Channel Selector, 12 Position, Models H14T17O, A, H14T17I, A, H14T17J, A.
	Knob	530V023M03	Channel Selector, 12 Position, Models H14TU17O, A, H14TU17I, A, H14TU17J, A.
	Knob	V-14983-13	On-Off Volume, Picture.
	Knob	530V031M01	VHF Fine Tuning, Models H14T17O, A, H14T17I, A, H14T17J, A.
	Knob	530V031M02	UHF/VHF Fine Tuning, Models H14TU17O, A, H14TU17I, A, H14TU17J, A.
	Cabinet	510V009M02	Models H14T17O, A, H14TU17O, A.
	Cabinet	510V009M03	Models H14T17I, A, H14TU17I, A.
	Cabinet	510V009M04	Models H14T17J, A, H14TU17J, A.



SHELF CHASSIS



RF TUNER-LEFT SIDE



RF TUNER-RIGHT SIDE

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BC5	580K	0Ω	2.5Ω	3.5Ω	† 200Ω	† 200Ω	0Ω		
V2	5CL8	15K	† 4900Ω	0Ω	4.5Ω	3.5Ω	† 2400Ω	† 200Ω	0Ω	220K
V3	3BZ6	480K	47Ω	7Ω	6Ω	† 670Ω	† 670Ω	0Ω		
V4	3BZ6	480K	47Ω	6Ω	5Ω	† 670Ω	† 670Ω	0Ω		
V5	3CB6	.1Ω	150Ω	5Ω	4.5Ω	† 670Ω	† 670Ω	0Ω		
V6	6BH8	100Ω	10K	† 5800Ω	11Ω	9.5Ω	120Ω	1Meg	† 200Ω	† 4000Ω
V7	3BN6	● 220Ω	1.2Ω	11.5Ω	11Ω	† 8200Ω	6.5Ω	‡560K		
V8	12C5	82Ω	500K	12.5Ω	15Ω	500K	† 900Ω	† 700Ω		
V9	3CS6	27K	0Ω	11.5Ω	12.5Ω	† 27K	† 6800Ω	1.5Meg		
V10	6CN7	0Ω	1.6Meg	680K	0Ω	0Ω	0Ω	●950K	●‡6Meg	1Ω
V11	12W6GT	NC	7Ω	† 290Ω	† 80Ω	● 1.2Meg	NC	9.5Ω	100Ω	
V12	7AU7	† 220K	●260K	1000Ω	18Ω	18Ω	† 56K	2.3Meg	1000Ω	17Ω
V13	12DQ6	NC	15Ω	NC	† 290Ω	470K	NC	17Ω	0Ω	TOP CAP ‡13Ω
V14	12D4	NC	NC	550K	NC	† 20Ω	NC	21Ω	18Ω	
V15	1X2B		PINS	1 THRU 9	HAVE	INFINITE	RESISTANCE			TOP CAP ‡612Ω
V16	14NP4A	1Ω	100K	Pin 6 † 180Ω	Pin 10 ‡1Meg	Pin 11 230K	Pin 12 2.5Ω			

† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V14.
● THIS READING WILL VARY; CONTROL SET FOR NORMAL OPERATION.
TP TIE POINT
NC NO CONNECTION

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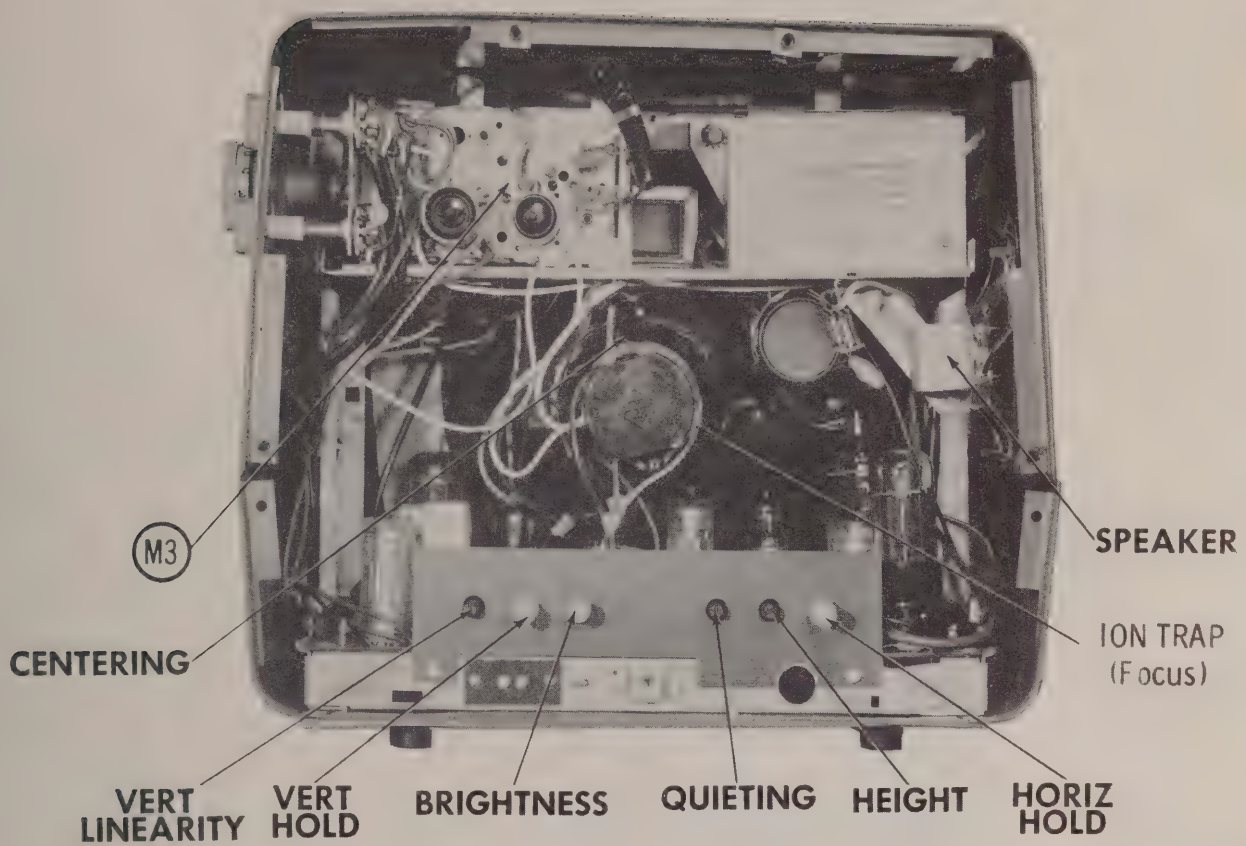
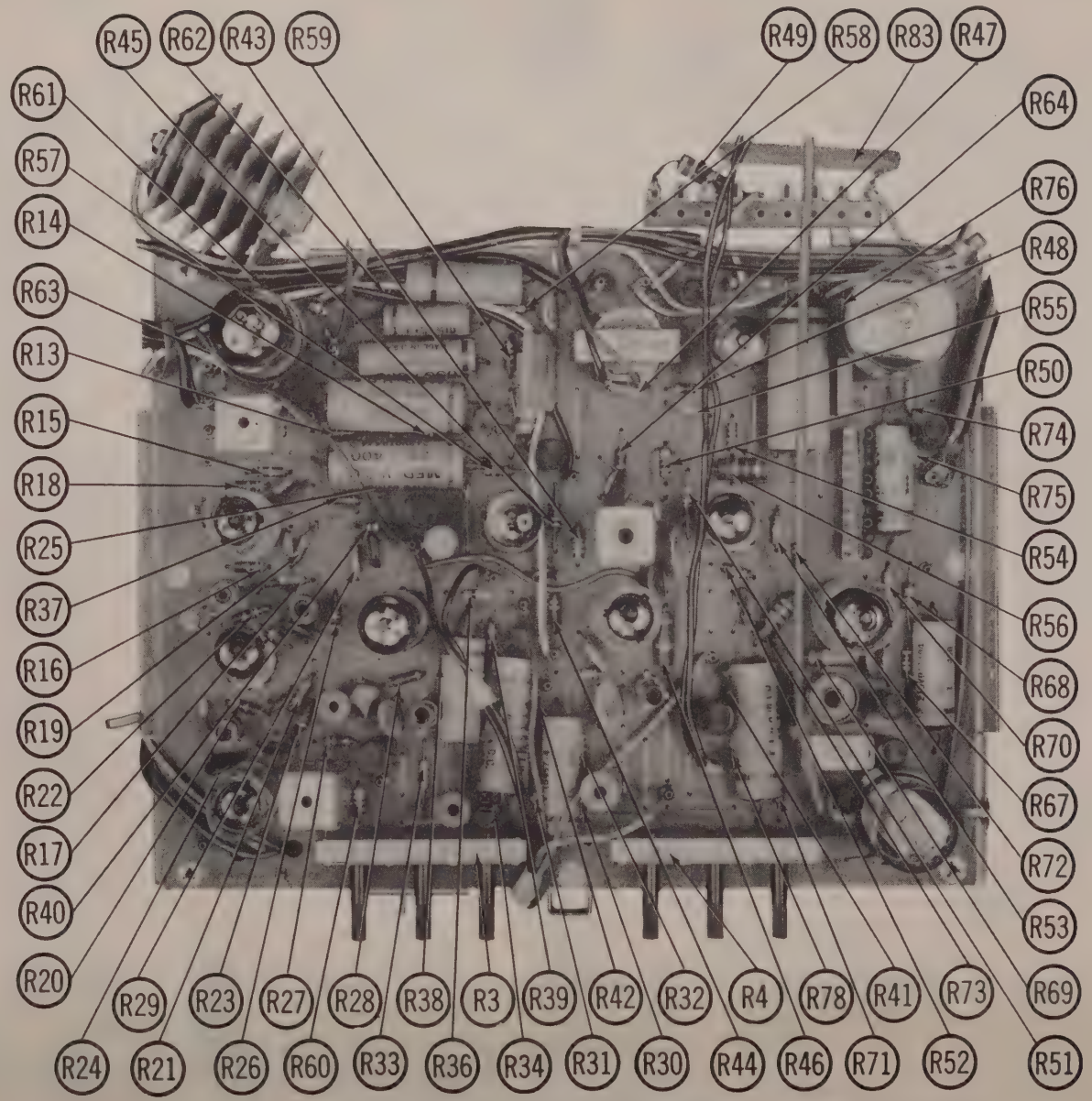
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Connect a short clip lead across the horizontal frequency coil (L17). This can be done on top of the chassis.
2. Set the horizontal hold control (R4C) to the middle of its range and leave it in this position through the following steps.
3. Connect the DC probe of the VTVM to pin 7 (grid) of the horizontal multivibrator (V12) and the common lead to B-.
4. With the receiver tuned to a TV station, adjust the horiz. mult. trimmer (B1) for zero reading on the VTVM. If zero can be approached but not quite reached at an extreme of B1, it may be necessary to set the horizontal hold control SLIGHTLY to one side of mid-range to obtain zero reading on the VTVM.
5. Remove the clip lead from across L17.
6. Adjust the horizontal frequency coil slug (B2) for zero reading on the meter and check the adjustment by switching off channel and back again. The receiver should pull into horizontal synchronization on all channels. If not, repeat adjustments.

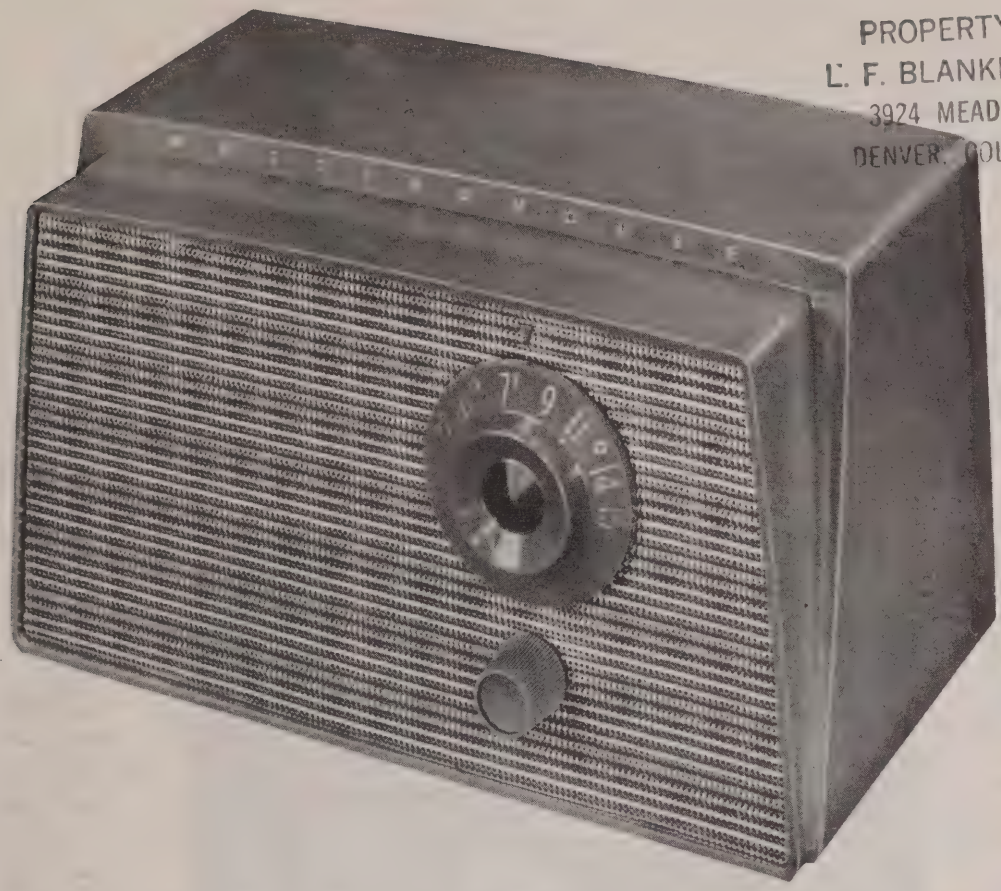


RESISTOR IDENTIFICATION

WESTINGHOUSE MODELS H-499T5B, H-500T5B, H-501T5B, H-503T5B, H-551T5B (Ch. V-2259-2)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE MODELS H-499T5B, H-500T5B, H-501T5B, H-503T5B, H-551T5B (Ch. V-2259-2)



WESTINGHOUSE MODELS H-499T5B, H-500T5B, H-501T5B, H-503T5B, H-551T5B (Ch. V-2259-2)

TRADE NAME	Westinghouse Models H-499T5B, H-500T5B, H-501T5B, H-503T5B, H-551T5B (V-2259-2)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N.J.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC
RATING	.29 Amp. @ 117 Volts AC (25 Watts)
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~ mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2 A3, A4	Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
2.	"	"	1625KC	Tuning gang fully open.	"	A5	"
3.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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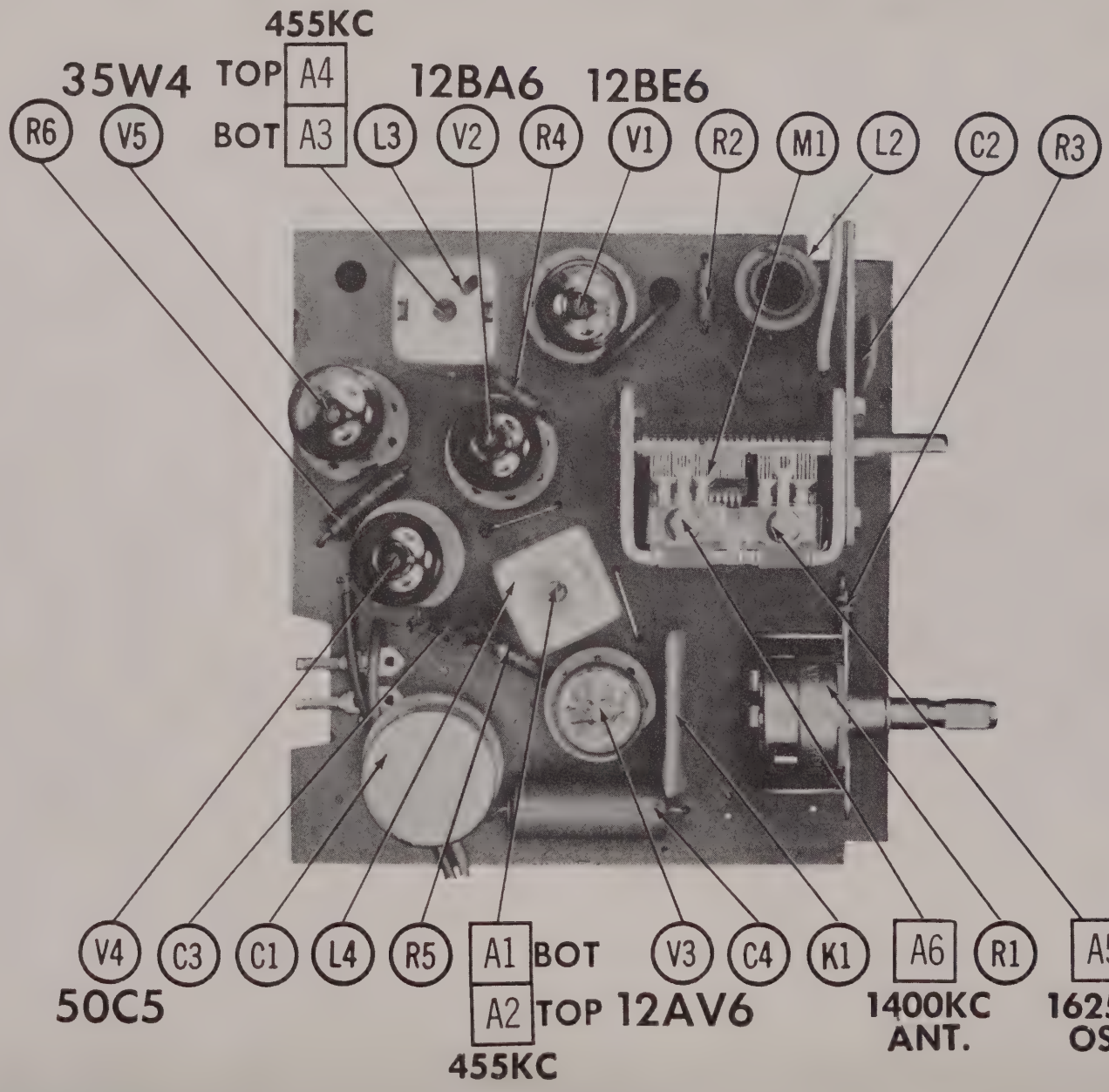


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amplifier	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▪50	150	V16233-1	AFH2-16	B0160	FP214	TMD-13	D-070	TVL-2435
B	▲50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000		215V111A03	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C3	10000	1000	215V300M03							
C4	.047	400	V10157-4473M	BPD-05	DF-503	CUB4S5		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	V15767-5					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R2	22K		250V232A23	BTS-22K	
R3	3.3Meg		250V233A35	BTS-3.3Meg	
R4	150Ω		250V231A51	BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Westinghouse PART No.	IRC PART No.	
R5	180Ω		250V221A81	BTS-180	
R6	1500Ω	1	250V331A52	BTA-1500	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	Part of Spkr.	Z1101	A-3025	A-3332	26S58 ①	S-12X	① Drill new mtg. hole

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	V-15557-1 ①	4A07	① Includes T1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	310V001M01				
L2	Osc. Coil	230V004M01				
L3	Input IF	V15547-1	16-6780	BC-356	13-PC1	
L4	Output IF	V15547-1	16-6780	BC-357	13-PC2	

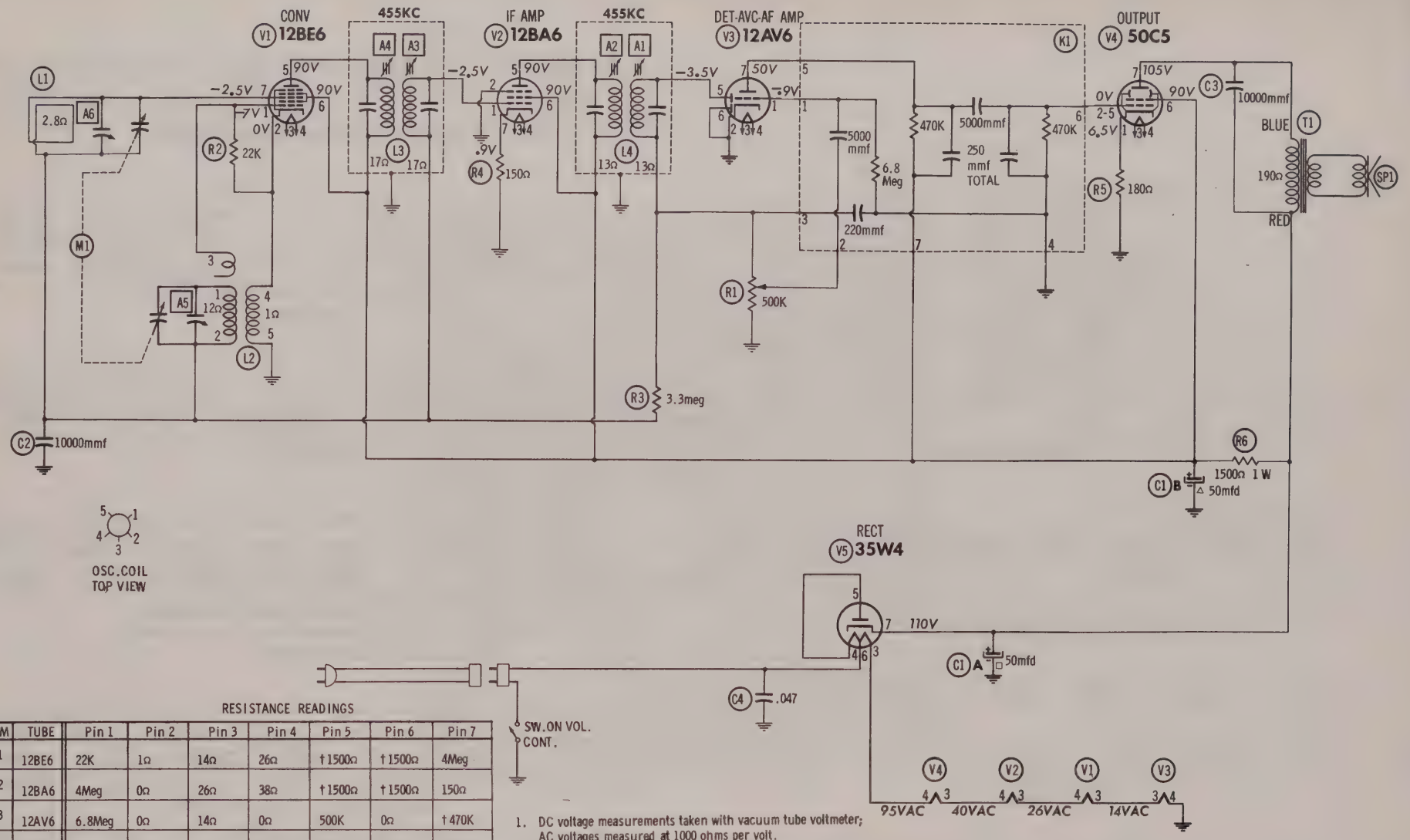
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA	
K1	Det.-Audio Net	5000MMF, 250MMF, 5000MMF 220MMF, 470K, 470K, 6.8Meg	219V001M01	Aerovox	PA512
				Centralab	PC-158
				Sprague	DT-4

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning cap	V15969-1	Two Gang
	Knob	550V001M01	Tuning, Model H-499T5B
	Knob	550V001M02	Tuning, Model H-500T5B
	Knob	550V001M03	Tuning, Model H-501T5B
	Knob	550V001M04	Tuning, Model H-503T5B
	Knob	550V001M05	Tuning, Model H-551T5B
	Knob	V14483-13	On-Off Volume, Model H-499T5B
	Knob	V14483-14	On-Off Volume, Model H-500T5B
	Knob	V14483-15	On-Off Volume, Model H-501T5B
	Knob	V14483-17	On-Off Volume, Model H-503T5B
	Knob	V14483-6	On-Off Volume, Model H-551T5B
	Cabinet	513V001M01	Model H-499T5B (Black)
	Cabinet	513V001M02	Model H-500T5B (Red)
	Cabinet	513V001M03	Model H-501T5B (Brown)
	Cabinet	513V001M04	Model H-503T5B (Lt. Gray)
	Cabinet	513V001M05	Model H-551T5B (Green)

WESTINGHOUSE MODEL H-499T5B



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	14Ω	26Ω	†1500Ω	†1500Ω	4Meg
V2	12BA6	4Meg	0Ω	26Ω	38Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8Meg	0Ω	14Ω	0Ω	500K	0Ω	†470K
V4	50C5	180Ω	470K	38Ω	90Ω	470K	†1500Ω	†190Ω
V5	35W4	NC	NC	90Ω	126Ω	126Ω	120Ω	20K

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.
TP TIE POINT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

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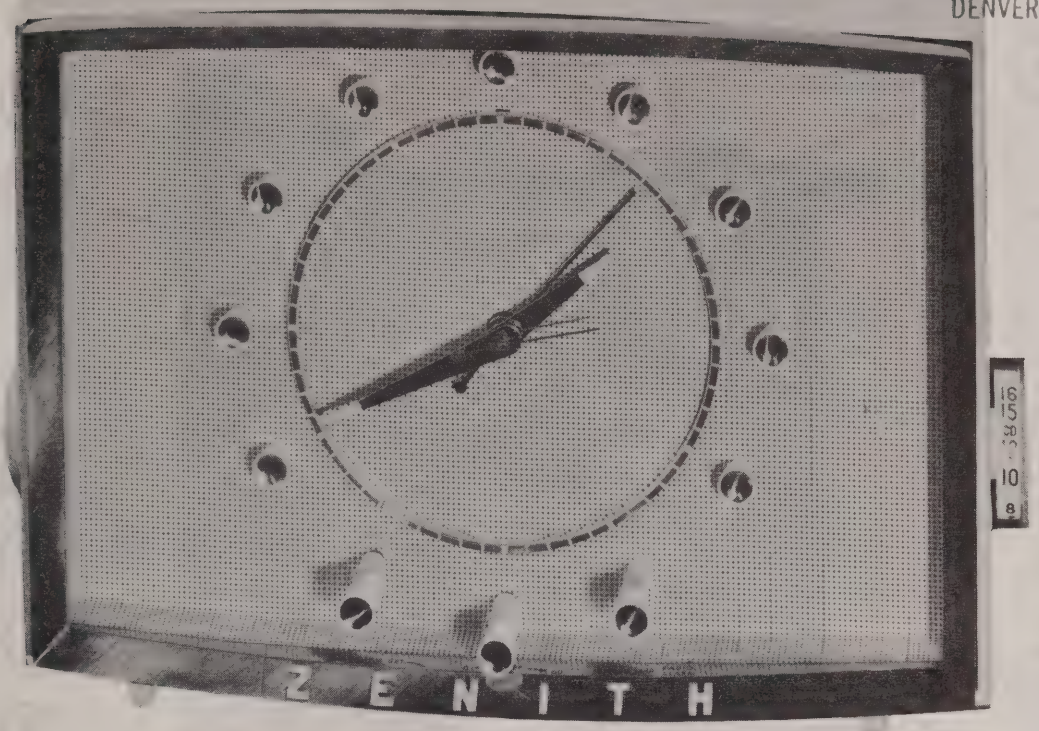
ZENITH MODEL
Z524W, Y (Ch. 5Z04)



ZENITH MODEL
Z524W, Y (Ch. 5Z04)

TRADE NAME	Zenith Models Z524W, Z524Y (Ch. 5Z04)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC Operated AM Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .34 Amp. @ 117 Volts AC (30 Watts With Clock)
TUNING RANGE—BROADCAST	535KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod.)	600KC	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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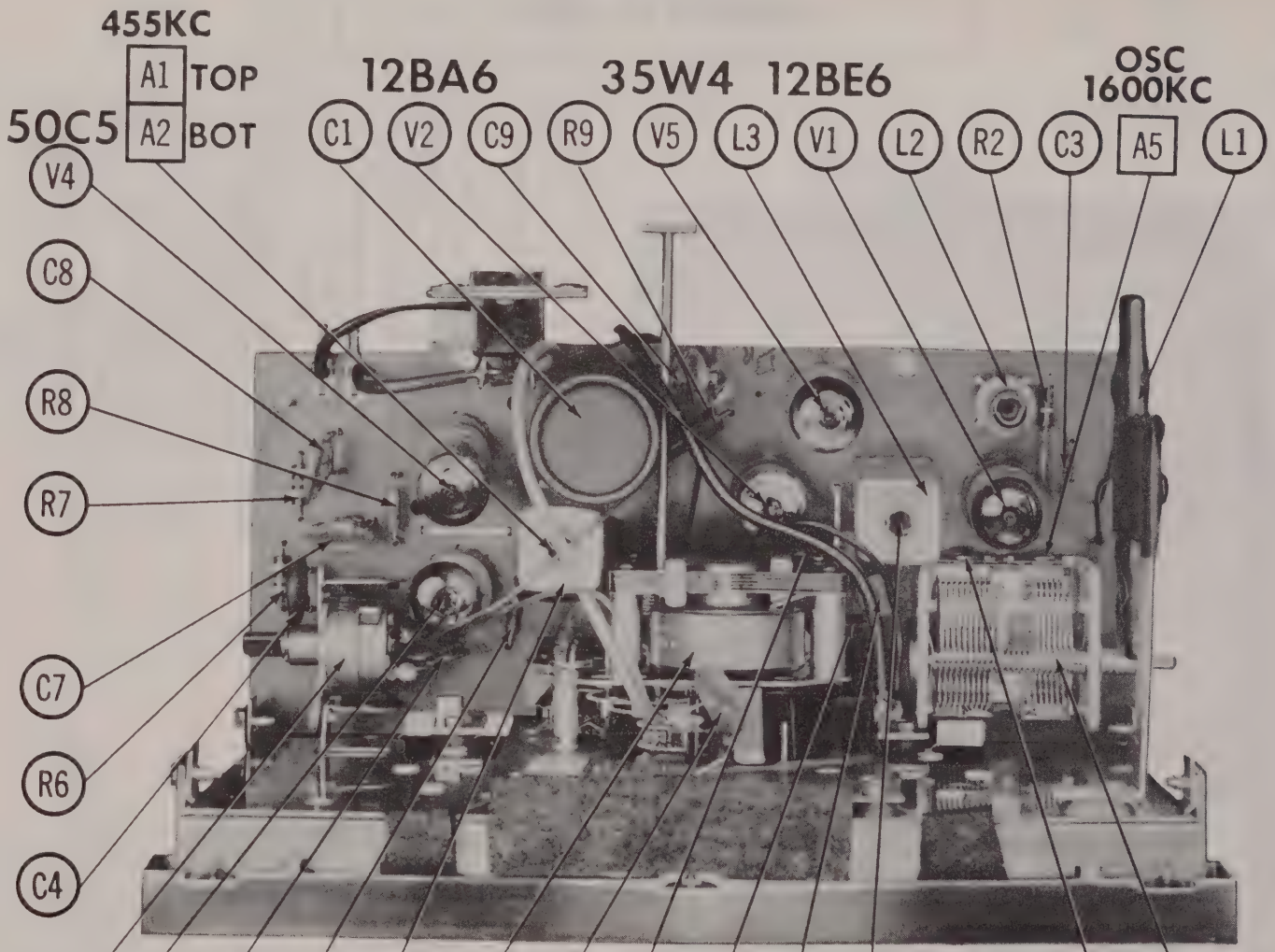


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amplifier	12AT6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▪80	150	22-2710	AFH2-19	XB0181	FP216	TMD-16	D-085	TVL-2442.1
B	▲40	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.047	200	22-2748	BPD-05	DF-503	BC2S47J		ACE6147	2SE-S47	
C3	100		22-5	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C4	470		22-6	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C5	10000		22-3	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C6	10000		22-3	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C7	10000		22-3	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C8	10000		22-3	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	
C9	10000		22-3	BPD-01	DD-103	BYA6S1	GP-10000	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1Meg	½	63-3622					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	22K			BTS-22K	
R3	68Ω			BTS-68	
R4	2.2Meg			BTS-2.2Meg	
R5	4.7Meg			BTS-4.7Meg	
R6	470K			BTS-470K	
R7	470K			BTS-470K	
R8	150Ω			BTS-150	
R9	1000Ω	1	63-965	BTA-1000	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω tapped	3-4Ω	95-1478	Z1103 ①	A-3031①	A-3336 ①	24S50A ①	S-16X ①	① Fabricate Mtg.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	3 1/2"	PM	3-4Ω	49-794 ①	3A07	① Includes T1

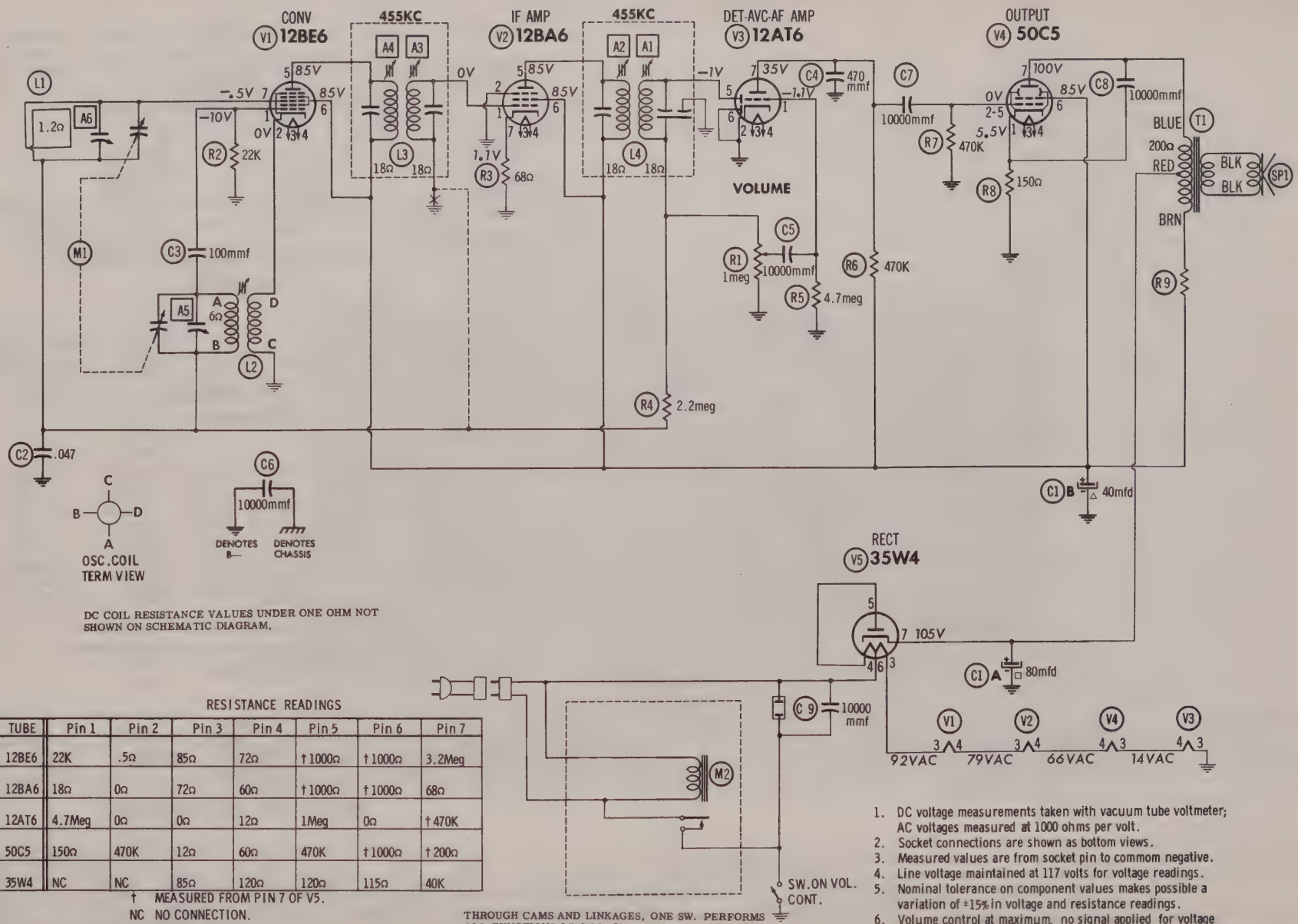
COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	S-24418				290 Microhenries
L2	Osc. Coil	S-24196				
L3	1st IF	95-1438		BC-356	13PC1	
L4	2nd IF	95-1439		BC-357		

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Tuning Cap	22-2749	Two Gang
M2	Clock Assy.	S-24169	
	Clock Crystal	192-219	
	Printed Board	S-24159	
	Knob	46-1480	On-Off-Volume, Model Z524Y
	Knob	46-1532	On-Off-Volume, Model Z524W
	Knob	46-1521	Tuning, Model Z524Y
	Knob	46-1522	Tuning, Model Z524W
	Knob	46-1524	Dial, Model Z524Y
	Knob	46-1525	Dial, Model Z524W

ZENITH MODEL Z524W (Ch. 5Z04)



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	85Ω	72Ω	†1000Ω	†1000Ω	3.2Meg
V2	12BA6	18Ω	0Ω	72Ω	60Ω	†1000Ω	†1000Ω	68Ω
V3	12AT6	4.7Meg	0Ω	0Ω	12Ω	1Meg	0Ω	†470K
V4	50C5	150Ω	470K	12Ω	60Ω	470K	†1000Ω	†200Ω
V5	35W4	NC	NC	85Ω	120Ω	120Ω	115Ω	40K

† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to commom negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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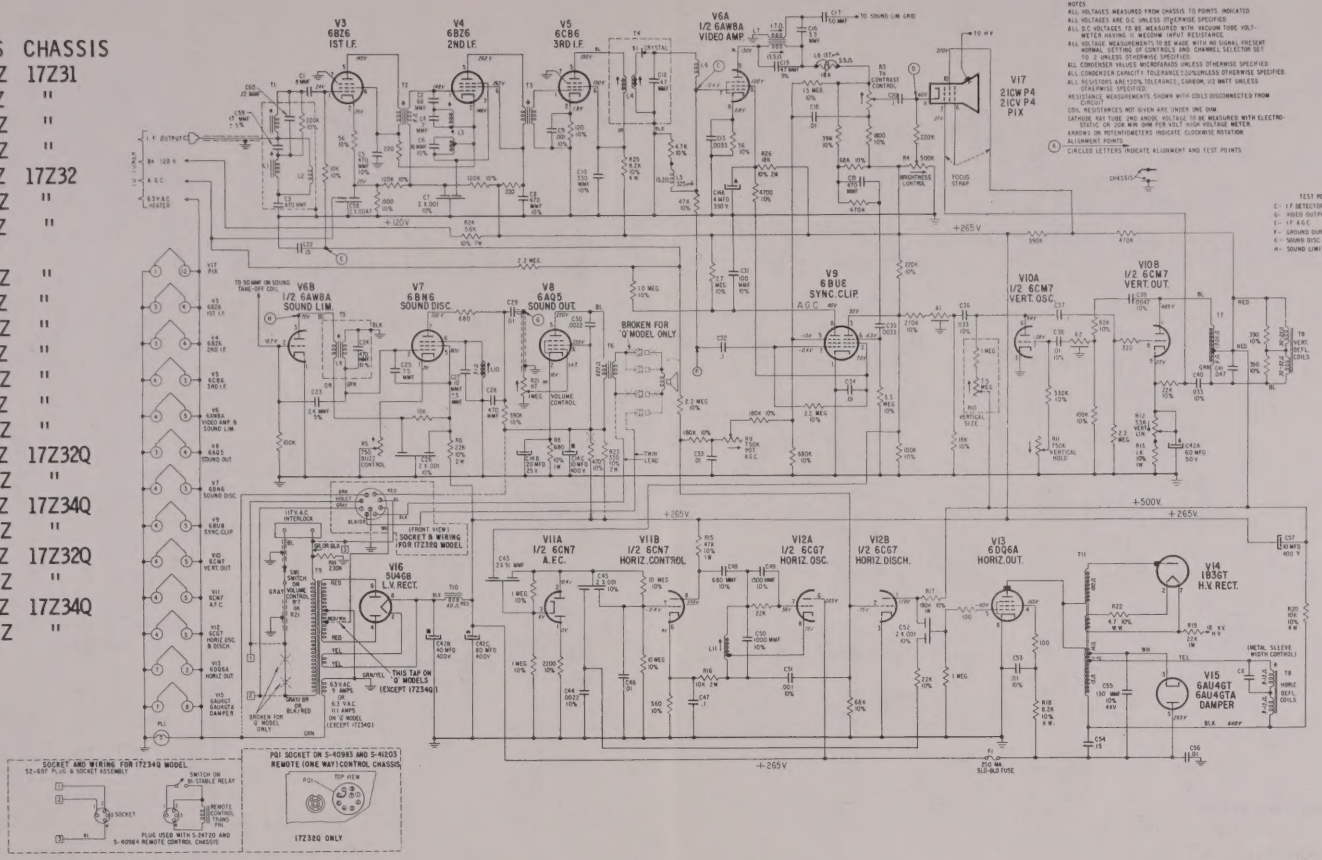
355-17

ZENITH MODELS	CHASSIS
Z2223CZ	17Z31
Z2223EZ	"
Z2223RZ	"
Z2223YZ	"
Z2243EZ	17Z32
Z2243RZ	"
Z2244EZ	"
Z22444	
Z2244RZ	"
Z2249EZ	"
Z2249RZ	"
Z2251EZ	"
Z2251RZ	"
Z2282EZ	"
Z2282RZ	"
Z3000EZ	17Z32Q
Z3000RZ	"
Z3001EZ	17Z34Q
Z3001RZ	"
Z3004EZ	17Z32Q
Z3004RZ	"
Z3008EZ	17Z34Q
Z3008RZ	"


V3 6BZ6 1ST I.F.
V4 6BZ6 2ND I.F.
V5 6CB6 3RD I.F.
V6A 1/2 6AW8A VIDEO AMP.
V17 21CWP4 21CVP4 PIX
V6B 1/2 6AW8A SOUND LIM.
V7 6BN6 SOUND DISC.
V8 6AQ5 SOUND OUT
V9 6BUE SYNC. CLIP.
V10A 1/2 6CM7 VERT. OSC.
V10B 1/2 6CM7 VERT. OUT.
V11A 1/2 6CN7 A.F.C.
V11B 1/2 6CN7 HORIZ. CONTROL
V12A 1/2 6CG7 HORIZ. OSC.
V12B 1/2 6CG7 HORIZ. DISCH.
V13 6DQ6A HORIZ. OUT.
V14 1B3GT H.V. RECT.
V15 6AU4GT 6AU4GTA DAMPER
V16 5U4GB L.V. RECT.
BROKEN FOR Q MODEL ONLY
THIS TAP ON Q MODELS (EXCEPT 17Z34Q)
SOCKET & WIRING FOR 17Z32Q MODEL
SOCKET AND WIRING FOR 17Z34Q MODEL
P01 SOCKET ON S-40983 AND S-41203 REMOTE (ONE WAY) CONTROL CHASSIS
17Z32Q ONLY
+120V
+265V
+500V
NOTES
TEST POINTS

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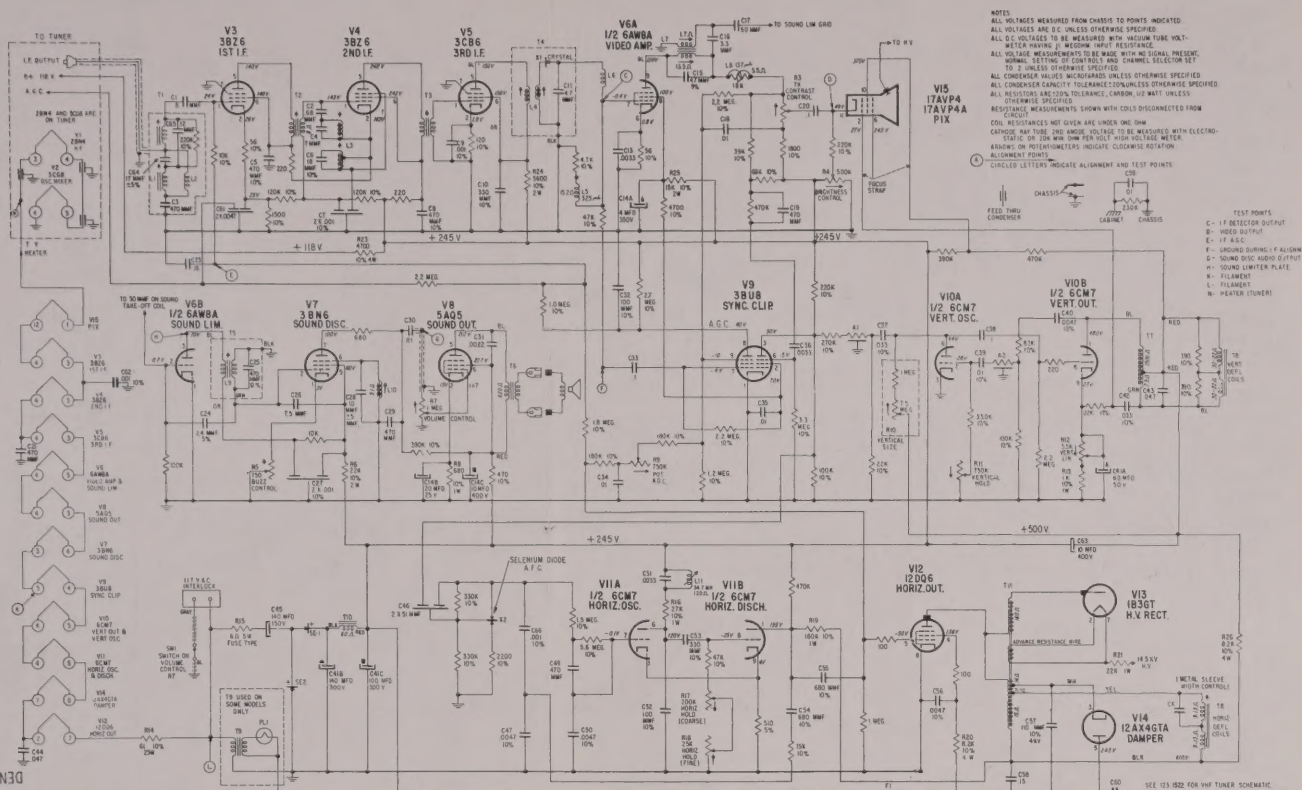
ZENITH

ZENITH
MODELS CHASSIS
Z1812GZ 15Z31
Z1817LZ "
Z1819JZ "



NOTES:
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED.
ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
ALL D.C. VOLTAGES TO BE MEASURED WITH VACUUM TUBE VOLTMETER HAVING 11 MEGOHM INPUT RESISTANCE.
ALL VOLTAGE MEASUREMENTS TO BE MADE WITH NO SIGNAL PRESENT, NORMAL SETTING OF CONTROLS AND CHANNEL SELECTOR SET TO 2 UNLESS OTHERWISE SPECIFIED.
ALL CONDENSER VALUES MICROFARADS UNLESS OTHERWISE SPECIFIED
ALL CONDENSER CAPACITY TOLERANCE ±20% UNLESS OTHERWISE SPECIFIED.
ALL RESISTORS ARE ±20% TOLERANCE, CARBON, 1/2 WATT UNLESS OTHERWISE SPECIFIED.
RESISTANCE MEASUREMENTS SHOWN WITH COILS DISCONNECTED FROM CIRCUIT.
COIL RESISTANCES NOT GIVEN ARE UNDER ONE OHM.
CATHODE RAY TUBE 2ND ANODE VOLTAGE TO BE MEASURED WITH ELECTROSTATIC OR 20K MIN OHM PER VOLT HIGH VOLTAGE METER.
ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION.
ALIGNMENT POINTS
CIRCLED LETTERS INDICATE ALIGNMENT AND TEST POINTS.

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